

INFORMATION SHARING;
A PRECEPT TO REGIONAL PROCUREMENT

Joseph Francis Russell

Library
Naval Postgraduate School
Monterey, California 93940

NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

INFORMATION SHARING;
A PRECEPT TO REGIONAL PROCUREMENT

by
Joseph Francis Russell, III
and
Lee Alan Ziegler

Thesis Advisor:

P. De Mayo

Approved for public release; distribution unlimited.

December 1974

T164330

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Information Sharing: A Precept to Regional Procurement		5. TYPE OF REPORT & PERIOD COVERED Master's thesis; December 1974
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Russell, Joseph F. and Ziegler, Lee A.		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE December 1974
		13. NUMBER OF PAGES 101
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Naval Postgraduate School Monterey, California 93940		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Procurement Information Exchange Data Banks Government Procurement Geographical Areas Military Procurement San Francisco Bay Area Information Sharing Data Management Information Retrieval Automation		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This thesis introduces the concept of sharing procurement information on a regional basis. It researches the literature on regions and fits the resulting theory to the San Francisco Bay area. It finds that the bulk of Navy procurement is accomplished on a regional basis. It		

considers existing automated logistics systems which contain procurement modules and finds that these applications are system rather than region oriented. However, they do contain techniques which can make sharing of data a viable concept. A rudimentary model which incorporates the theory and practice of regions with state of the art automated techniques is presented. This model shows that regional information sharing may be an effective and desirable way to accomplish procurement in a more efficient manner. The thesis avoids a confrontation with command prerogatives which have frustrated previous attempts at regionalization. This thesis concludes with the framework of a study plan to further validate the concept.

Information Sharing;
A Precept to Regional Procurement

by

Joseph Francis Russell, III
Commander, Supply Corps, United States Navy
B. S., Spring Hill College, 1958

and

Lee Alan Ziegler
Lieutenant Commander, Supply Corps, United States Navy
B. A., Miami University, 1965

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

12/1/00

ABSTRACT

This thesis introduces the concept of sharing procurement information on a regional basis. It researches the literature on regions and fits the resulting theory to the San Francisco Bay area. It finds that the bulk of Navy procurement is accomplished on a regional basis. It considers existing automated logistics systems which contain procurement modules and finds that these applications are system rather than region oriented. However, they do contain techniques which can make sharing of data a viable concept. A rudimentary model which incorporates the theory and practice of regions with state of the art automated techniques is presented. This model shows that regional information sharing may be an effective and desirable way to accomplish procurement in a more efficient manner. The thesis avoids a confrontation with command prerogatives which have frustrated previous attempts at regionalization. This thesis concludes with the framework of a study plan to further validate the concept.

TABLE OF CONTENTS

I.	INTRODUCTION	8
A.	SUBJECT OF THE STUDY	8
B.	OBJECTIVE OF THE STUDY	9
C.	SCOPE AND LIMITATIONS	9
1.	Organization	9
2.	Regional Boundaries	10
3.	Depth of Study	10
D.	ORGANIZATION OF THE THESIS	11
II.	BACKGROUND	12
A.	DEPARTMENT OF DEFENSE LOGISTICS PLAN	12
B.	FORMATION OF TASK GROUP 3-73	13
C.	FORMATION OF THESIS TOPIC	14
D.	FIELD PROCUREMENT	15
1.	Discussion	15
2.	Comparison of Military Services	21
3.	DCAS--A Bellwether	24
E.	POINTS OF VIEW	25
1.	A View of the Future	25
2.	A Practical Application	25
3.	Standardization--A First Cut	26
4.	Bidders Mailing Lists	26
F.	CONCLUSION	27
III.	RESEARCH TECHNIQUE AND ASSUMPTIONS	29
A.	INTERVIEWS	29
B.	ASSUMPTIONS	30
1.	DOD General	30
2.	DOD Resources Projections	31
3.	Technological Expectations	32
C.	CONCLUSION	33
IV.	REGIONAL PROCUREMENT	34
A.	THEORY OF THE REGION	34
1.	Metropolis	34

2.	Economic Criteria -----	35
3.	Transportation and Spatial Criteria -----	36
4.	Organizational Structure -----	37
5.	Statistical Regions -----	38
B.	FEDERAL PROCUREMENT AND THE REGION -----	39
1.	Civilian Agencies -----	39
2.	Department of Defense -----	41
3.	Existing Federal Regions -----	42
C.	THE SAN FRANCISCO BAY AREA -----	45
1.	Population -----	45
2.	Transportation -----	47
3.	Retail Trade and Services -----	48
4.	Military -----	50
D.	CONCLUSION -----	51
V.	AUTOMATION IN PROCUREMENT -----	53
A.	EXISTING APPLICATIONS -----	53
1.	U. S. Army -----	53
2.	U. S. Navy -----	56
3.	U. S. Air Force -----	60
4.	Defense Supply Agency -----	63
5.	Department of Defense -----	64
6.	General Services Administration -----	64
B.	CRITIQUE OF EXISTING APPLICATIONS -----	64
1.	Task Group 3-73 Critique -----	65
2.	Author's Review -----	68
C.	FUTURE INITIATIVES AND IMPLICATIONS -----	70
D.	CONCLUSION -----	71
VI.	A MODEL OF INFORMATION SHARING -----	73
A.	INFORMATION REQUIREMENTS -----	73
1.	Procurement History -----	74
2.	Information Sharing -----	77
B.	APPLICATION OF INFORMATION SHARING -----	78
C.	THE CHALLENGE OF INFORMATION SHARING -----	80
1.	Information Versus Control -----	80
2.	Uniform Distribution of Benefit -----	81
3.	System Isolation -----	82

D.	IMPLICATIONS OF THE MODEL -----	82
1.	Standardization -----	82
2.	Data Computability -----	83
3.	Expansion of Market Sphere -----	83
VII.	CONCLUSIONS AND RECOMMENDATIONS -----	85
A.	CONSLUSIONS -----	85
1.	Feasibility -----	85
2.	Benefits -----	86
3.	Obstacles -----	87
B.	RECOMMENDATIONS FOR FURTHER STUDY -----	88
C.	IMPLICATIONS REVISITED -----	90
	APPENDIX A DOD ACTIVITIES -----	92
	APPENDIX B INTERVIEWS -----	95
	BIBLIOGRAPHY -----	98
	INITIAL DISTRIBUTION LIST -----	100

I. INTRODUCTION

To the reader familiar with the history of automated or regional procurement, the title of this study suffers from comparisons with a prolonged series of attempts, near-starts, and false promises of solutions to problems of long-standing and better times. Far from being a pie-in-the-sky panacea, this thesis offers a fresh approach to accomplish an objective long overdue: field level sharing of procurement management information.

This study was due in part to a belief of the authors that managers of future military logistics functions will be compelled to cross component and service lines in order to continue to perform the support missions, particularly procurement support. This belief did not prefigure a consolidation, unification, integration, federalization or joint venture, nor was it necessarily based on any combination of buying offices. What it is based on is a simple extrapolation of decreasing resources (both funding and personnel), and the increasing capability of computer technology.

The military logistics environment of the future will mandate a choice, one that is either controllable, beginning now to actively pursue compatibility as a goal, or uncontrollable, where policy and procedures are no longer influenced by operational commanders, but centralized in the hands of a federal administrator.

A. SUBJECT OF THE STUDY

As originally envisioned, the subject of this thesis was the application of automated techniques to regional procurement management and control. Subsequently the focus narrowed to defining regional procurement, postulating on the benefits of applied automated techniques and basing the

postulates on sharing procurement information within a specified geographical area.

It is, therefore, a general futuristic view of effective and efficient procurement management, enhanced through the use of automation within a geographical region.

The subject expands one aspect of the efforts of a Department of Defense Logistics Systems Policy Committee (LSPC) Task Group which had as a principle assignment the improvement of procurement responsiveness to user requirements and the simplification and facilitation of management and control of the procurement process through greater use of automation. The Task Group found it necessary to express a need for greater use of regional procurement and regional management and control as a means of increasing the feasibility of using automated techniques in the procurement process. The subject was not within the scope of the Task Group's charter and this effort is supplemental to it.

B. OBJECTIVE OF THE STUDY

The overall objective of this thesis was to promote a serious dialogue between systems users and systems designers on the necessity of considering automation and regionalization as applied to procurement. Somewhat more specifically, the major study objectives were: (1) to explore and document previous and future efforts in regional automation; (2) to relate those efforts to procurement management and control; (3) to provide a basis on which to begin more detailed study; and (4) to present a recommended procurement research program which considers automation and regionalization.

C. SCOPE AND LIMITATION

1. Organization

Upon launching this study effort, the authors were immediately confronted with the immense subject of federal procurement. Although the concept about which this thesis

is written could be implemented by all federal agencies, the scope is limited to the DOD, with only brief forays into civilian agencies such as GSA.

2. Regional Boundaries

Throughout this report, many of the arguments are illustrated by reference to the San Francisco Bay area. This approach was taken because of the proximity to the Naval Postgraduate School, and the variety of federal agencies located there. The area was conceptualized as a typical region in terms of the interaction between federal buyers and commercial suppliers. The theory of the region and its application to the San Francisco Bay area is documented in chapter IV.

3. Depth of the Study

This thesis considers federal aspects of regionalization to a limited degree and it concentrates primarily on the DOD activities within the San Francisco Bay area. While the authors were most cordially received at each activity visited, organizational ties to the Navy directed the main thrust of the sharing concept at the Naval Supply Center, Oakland (NSC Oakland). Therefore, while the same general questions were asked of all activities, the specifics were gained at NSC Oakland. This limitation should in no way denigrate the universal conclusion of this thesis, for as will be developed later, all procurement activities mentioned begin with either the Armed Services Procurement Regulation (ASPR) or Federal Procurement Regulation (FPR), and increased efficiency in common functions should be applied to all.

The study plan for this project originally called for surveys at each activity listed in Appendix A. The results were to be synthesized into a model on which various existing data base formats could be tested in an attempt to determine the optimum combination of concepts or formats which could then be shared. The subject of regionalized automated procurement appeared overwhelming and the authors

settled for selected visits and telephone interviews with various activities. A vast and important segment, which was not treated in this paper, is the state and local procurement organizations.

D. ORGANIZATION OF THE THESIS

Chapter I prefigures the concept of information sharing. It stated the purpose of the project, the reasons why it is important to the procurement community, and a few of the reasons which limited the results.

The next chapter provides the background from which the project evolved, and an overview of the history of procurement geographically and organizationally removed from the headquarters procurement functions--field procurement.

Chapter III provides the rationale for the narrowing of focus of the project, and presents the basic assumptions on which the concept is based.

Chapters IV and V report the bulk of the research in this thesis. They explore and document information available on regional procurement (Chapter IV), and automated procurement (Chapter V).

Chapter VI synthesizes and formulates a model of information sharing in the abstract.

The final chapter draws conclusions from the model and provides substance upon which future researchers may build in order to bring to fruition the concept of sharing procurement information on a regional basis.

II. BACKGROUND

This chapter presents the contextual circumstances in which development of the thesis took place. It dwells on the DOD logistics systems study effort from which the thesis topic was formed. It discusses field procurement and presents a definition, specifically, the Navy definition of field procurement. The chapter concludes with a consideration of procurement organizations within and beyond the Department of Defense.

A. DEPARTMENT OF DEFENSE LOGISTICS PLAN (DOD LOGPLAN)

In 1968 the General Accounting Office (GAO) published a report which confirmed the need for an overall plan within the DOD to provide more adequate control over the planning, development and implementation of management systems. Upon publication, the Office of the Secretary of Defense expressed the intention to develop logistics systems guidelines to parallel the DOD Five Year Defense Plan. This declaration marked the beginning of the current era of logistics systems standardization and coordination within DOD. A conference was held at which Military Department Material Secretaries and senior military service logisticians agreed to continue periodic meetings as a corporate body to guide the DOD LOGPLAN. Thus was born the Logistics Systems Policy Committee (LSPC).

In April 1970 a task group was formed by the LSPC to develop, among other things, a profile description of the emerging logistics system for the 1975-1980 time frame. The composition of the task group was the same as the LSPC and included representatives of the four military services, the offices of the Assistant Secretaries of Defense for Installations and Logistics, and Comptroller, the Offices of the Joint Chiefs of Staff and the Defense Supply Agency.

In January, 1970, Mr. David Packard, Deputy Secretary of

Defense, published 21 objectives to be incorporated in the DOD LOGPLAN. The objectives called for eliminating item management duplication, minimizing the number of items in the system, minimizing the number of inventory control points and maximizing reliance on support from integrated wholesale supply systems.

The LSPC's course in developing the LOGPLAN has been to charter task groups to study and make recommendations on logistics methods and management techniques. It published the first task group report, the first increment of the LOGPLAN, in May 1972. Two increments have since been written and 18 task groups have been assigned. It now consists of 41 objectives all designed to reach its broad goal: to support the operations of the military forces with ever greater efficiency and economy.

B. FORMATION OF TASK GROUP 3-73

Task Group 3-73 was chartered by the LSPC in December, 1972. Its objective was to improve procurement responsiveness to user requirements and simplify and facilitate management and control of the procurement process through greater use of automation in procurement.

The parameters of the study were: (1) identify the processes or areas of procurement where automation could be effectively applied; (2) recommend specific time-phased actions to accomplish procurement automation; and (3) provide recommendations for improving management performance reporting.

Specifically included among areas to be examined were: (1) organizational and functional responsibilities and policies, and directly related procedures for procurement execution, documentation and reporting from the buying element through the DOD to the Congress; (2) lessons learned from specific approaches already implemented, such as MILSCAP, PIECOST, and data banks to assist in contractor evaluation; (3) determination of the extent of current

application of automation in the procurement process by individual Service/Component, e.g., partial or complete automation of small purchases, source lists, delivery orders, and the ways in which such information may be circulated among the services; (4) identification and evaluation as to which actual buying processes could be more effectively automated; (5) examination of new processes or techniques of automation to improve communication in the procurement process and thereby improve overall procurement performance; (6) identification of procurement policies such as those found in ASPR which inhibit automation and recommend changes to such policies; (7) consideration of methods/mechanisms to insure the adequate interchange of creative new concepts for the automation of the procurement process; and (8) a detailed review of previous and ongoing studies related to automated procurement systems [Ref. 36].

Consideration of the foregoing in some detail was necessary to the project at hand as it provides the scope of Task Group 3-73's examination. An indication that the complexity is recognized by the LSPC can be gained from a list of the proposed staffing contained in the charter. The LSPC proposed a composition of Procurement Analysts, and Contract, ADP Systems, Supply Management and Telecommunications Specialists. The group visited 24 DOD procurement activities, received approximately 24 briefings by procurement and systems personnel, and analyzed 36 automated and semi-automated systems. The study was originally scheduled for completion in February 1974, but slipped until late September.

C. FORMATION OF THESIS TOPIC

The chairman of Task Group 3-73 drew on every resource available in order to accomplish his objective. A productive resource proved to be the Naval Postgraduate School. In July 1973, the Task Group recognized a need for greater use of regional procuring and regional management

and control of procurement as an integral step to the use of automated techniques in the procurement process, which was thought to be beyond the scope of the task group. Since it then appeared, as it appears now, that the Navy had the only viable concept of regional procurement in operation, investigation into its greater use seemed opportune to the school in terms of a procurement research project. Its form as a thesis was acceptable and the task group chairman has recommended that it be appended to the final report of the task group and be made a part of the DCD LOGPLAN.

D. FIELD PROCUREMENT

1. Discussion

This chapter has described the DOD baseline effort from which this thesis topic originated. It now becomes important to differentiate between levels of procurement and to understand the particular strata that was examined, namely that of field procurement. Using dollars obligated as a criterion, obvious differentiations should be immediately apparent when comparing field procurement with weapons systems acquisition. However, below the level of weapons acquisition, the differentiation becomes unclear due in part to the differences in organizational structure in federal agencies. Part 2 of this section compares organizational structures.

Further differentiation is also difficult because of the traditional view of government procurement below the weapons acquisition level as a "housekeeping" function. This view has largely been shared by Congress, the courts and other public agencies [Ref. 15]. In the context of "housekeeping", the tendency is to view procurement as small purchase, i.e., purchases of such minor consequence as to permit use of simplified solicitation, evaluation, and payment procedures.

Field procurement may be base purchasing at the local level, it may be a "housekeeping" function, but it is

also procurement of anything not purchased by a headquarters support office and may cover all levels below major weapons acquisition in terms of the dollar criterion. So defined, field procurement in the federal government accounts for all but one percent of the 14 million procurement transactions consummated each year [Ref. 17].

a. Field Purchasing in NAVSUP

Funding and time constraints did not permit an in depth review of all field procurement systems. Therefore, the authors drew on the Navy Field Purchasing System for detailed analysis and compared findings with those of the task group which reviewed all services and components. It is significant that Task Group 3-73 finds the Navy Regional Procurement Office concept unique in the DOD [Ref. 36].

In Fiscal Year 1974 the Naval Supply Systems Command (NAVSUPSYSCOM), Navy Field Purchasing System obligated approximately \$2.8 billion and generated 2,478,095 procurement transactions, or, 2.5 percent of the dollars and 99 percent of the transactions in the Navy [Ref. 30]. The responsibility of the NAVSUPSYSCOM in the function of procurement is to act as a procuring activity within the meaning of ASPR (1-201.14) for procurement by field activities of required supplies and services including the following: (1) inventory in support of the Naval Supply System; (2) research and development; (3) resale and housekeeping items; (4) maintenance and repair services; (5) cargo terminal services, stevedoring service and certain admiralty services [Ref. 13].

Decentralized purchasing, centralized by area and by commodity to the maximum extent practicable is the policy of the NAVSUPSYSCOM. The advantages gained through the specialization of functions, centralization of buying skills and the increased knowledge of and familiarity with sources of supply are the primary basis for centralized area buying. In addition to responsibilities as regional buying

activities, these central office's: (1) prepare contract bulletins for items included in their indefinite quantity or other term contracts for use by activities in the area; (2) provide procurement assistance in advance procurement planning; (3) provide representation to committees, participate in studies and procurement test procedures; (4) maintain a program to standardize operating procedures; plus 17 other specific functional management responsibilities

The Navy Field Purchase System is organized to perform the following types of procurement:

(1) Systems Support. This function consists of the purchase of supply system items to support existing weapons systems. The procurement operations are performed in the Navy's two Inventory Control Points: Aviation Supply Office, and Ships Parts Control Center.

(2) Area Support. This function consists mainly of the purchase of non-standard supplies and services such as research and development, maintenance support, master ship repair, janitorial services, household effects moving, stevedoring, tug and towing, and pilotage for naval activities within a geographic area. The procurement operations are performed by Navy Regional Procurement Offices and other designated purchasing activities. Navy Regional Procurement Office Long Beach for example, with annual contracts valued at \$210 million, supports nine major activities in the southern California area, six of which are Research and Development Laboratories (e.g. Naval Weapons Center China Lake; Naval Electronics Laboratory Center San Diego; and Naval Undersea Center Pasadena).

(3) Station Support. This function consists of the purchase of the requirements of a particular station. The following listing shows how elements of the Navy Field Purchase System are related [Ref. 30].

ELEMENT	NUMBER OF ACTIONS	%	VALUE(000)	%
Systems Support	132,975	5	\$1,015,011	36
Area Support	332,976	13	451,007	16
Station Support	2,012,144	82	1,325,218	48
Total NAVSUPSYSCOM	2,478,095	100	2,791,236	100

A significant conclusion regarding the above table is in order. The bulk of Navy procurement takes place within a region either through area or station support. On the other hand much of the emphasis on procurement automation has been directed at systems support. The implication of this point on information sharing will be developed in later chapters.

b. History of Navy Regional Procurement Offices

In 1966 the Navy Field Purchasing System consisted of nearly 200 significant field purchasing activities, plus hundreds of smaller activities which were limited to \$250 purchasing authority. Supervision, professional guidance and training necessary for proper management from one central location was neither possible nor practical because of increasing complexities in procurement regulations, complaints to Congress, the number and geographic dispersal of activities, and the less than adequate resources available to the headquarters group.

In February 1967 a plan to establish a Navy Area Buying Command in the Twelfth Naval District was promulgated. The choice of location was based upon the combination of industrial, scientific, and general activities in the area. A staff of seven was hired for the express purpose of directing the development of and

providing technical guidance to field purchasing activities located within the assigned region. The fundamental intent of the plan was to place a highly skilled group of managers in a local geographic area where a concentration of activities was conducting a large volume of purchase actions. The primary goal was to furnish immediate day-to-day localized definitive surveillance, advice, guidance, and training in order to achieve improved responsiveness and hard dollar savings. The Navy Area Buying Command was successful in meeting that goal [Ref. 31].

The entire Field Purchase System was then examined to determine the proper course of action which would capitalize on the new method of operation. The question of centralization versus decentralization was asked again, not in terms of management control which had been proven, but from the standpoint of major contract support. The conclusion reached was that there must be a strong, independent, central purchasing organization which would be responsible for the bulk of a region's major purchase actions and that limited amounts of local purchasing authority must be granted to the activities located within a region commensurate with the demands of their missions. Thus were born the Navy Regional Procurement Offices.

c. Management of Field Procurement

Management of field procurement presents a host of problems which are handled by various means according to the philosophy of the parent organization. Such methods are not of immediate concern to the project at hand except where they prevent the possible establishment of regional sharing of procurement data. To illustrate such adverse impact consider the following cases:

A U. S. Air Force Procurement Management Review for the U. S. Air Force Southern Command indicated that the Army, Navy, and Air Force each had a procurement activity in the Panama Canal Zone. Supplies and services procured by

these three activities were similiar in nature. There were a limited number of bidders especially in the services and construction area. This resulted in competition among the procurement offices for contractors where like items and services were concerned. As a result, this practice had a negative influence on the procurement process. The Procurement Management Review recommended that the Office of the Secretary of Defense (ASD I&L) evaluate the feasibility of consolidating Army, Navy, and Air Force procurement support into a Department of Defense Procurement Center. The estimated savings as a result of establishing such an office were \$492,985 per annum. The recommendation was not adopted [Ref. 28].

The U. S. Naval District Washington D. C. at the direction of the Chief of Naval Operations undertook to consolidate U. S. Navy common support functions in the district. Nine procurement offices were found to be within 20 miles of each other, all involved in procurement of Research and Development or related support for research facilities; and all competing for a limited market of technical skills. The estimated savings as a result of such a consolication were \$228,093 per annum. The recommended consolidation was not adopted [Ref. 1].

These examples are cited as actual cases of previous attempts to maximize the usefulness of limited resources through consolidation of field procurement. The recommendations failed to recognize an organic procurement capability as one of the tools the commander perceives as a requirement for achieving mission responsiveness. The authors sensed an overriding need for mission responsiveness at each activity visited. Extrapolating that perception to all procurement offices one could readily be overwhelmed by the task of effecting an attitude change to facilitate possible regionalization of procurement. Certainly in the DOD the call for consolidation of functional tasks in the field falls on deaf ears as long as the missions of

organizations compel support functions to be vertically integrated.

d. Commission on Government Procurement

The formal report presented to the Commission did not delve into the issue of field procurement. It stated, however, in a staff report, a need for further study into the multiplicity and duplication of local area purchase offices or agencies in major cities of the country, and listed the problem as one of 12 identified by the Commission Study Groups requiring government wide attention [Ref. 28].

e. Conclusion

A new approach is in order. The idea of sharing information as opposed to controlling it is the cornerstone of this thesis and offers a fresh approach. The logistics organization is attuned to the accomplishment of the mission. For that reason the Army, Navy, Air Force, Defense Supply Agency and General Services Administration's concept of regional procurement systems, though mechanized, did not contemplate receiving or providing any support from without the organization. The concept of sharing does not impinge upon mission responsiveness, and it is considered a more realistic approach to gain efficiency in field procurement than consolidation of the functions.

2. Comparison of Military Services and Agencies

The following paragraphs provide background considerations of field procurement organizations. The distinctions noted result from information provided by the Commission on Government Procurement in its chapter on Field Contract Support [Ref. 28] and by Task Group 3-73 of the LSPC [Ref. 18].

a. Department of Defense

(1) General. Creation of the DOD by the National Security Act of 1947 was a major step in the unification of the Armed Forces. Unification of procurement policy, however, was not realized. This condition led finally to enactment of the Defense Appropriations Act of

1953. Under that law, officers and agencies of the DOD were prohibited from using funds for, among other things, procuring supplies except under regulations issued by the Secretary of Defense. Thus resulted the Armed Services Procurement Regulation (ASPR) replacing separate regulations and establishing policy for all services.

(2) Field Procurement. The Army, Navy, Air Force and DSA have procurement authority and engage in local area/base type purchasing. In addition there are a number of other agencies of the DOD that are also engaged in similar purchasing. It is estimated that there are 635 purchasing offices involved in field purchasing in the DOD and 165 headquarters type procurement offices.

b. U. S. Army

(1) General. During World War II, Army procurement was managed by various functional "Corps", i.e., Chemical, Signal, Quartermaster, etc. Between World War II and 1962, the trend was toward regionally dispersed centralized procurement and procurement management. In a major reorganization in the summer of 1962 the Army Material Command (AMC) was created and the procurement functions of the "Corps" were transferred to it. Weapons and related military material are currently procured by AMC through seven commodity commanders, i.e., Electronics, Munitions, Missiles, etc.

(2) Field Procurement. The Continental Army Command, its five subordinate numbered armies, and the Military District Washington, act as Head of Procurement Activities (HPA) in controlling the procurement operations of posts, camps and stations.

c. U. S. Navy

(1) General. At the end of World War II most of the Navy's procurement dollars were being spent by the technical bureaus in Washington, D.C. This centralized purchasing continued until after the war, although additional authority was delegated to Navy field purchasing

offices. In May, 1966, Navy systems commands were formed, replacing the technical bureaus. The Naval Material Command (NAVMAT) reported to the Chief of Naval Operations with the systems commands, i.e., Ships, Air, Ordinance, Supply, etc. being subordinate to it. NAVMAT is charged with setting procurement policy for the various commands and the Navy generally.

(2) Field Procurement. The Naval Supply Systems Command has delegated contracting authority to field activities throughout the continental United States and overseas.

d. U. S. Air Force

(1) General. Upon separation of the Air Force from the Army in 1947, the Air Material Command (AMC) was at Wright-Patterson Air Force Base, and a Procurement and Production Directorate was formed at Headquarters U.S. Air Force, to establish policy and supervise AMC's procurement operations. Early in the 50's, when selected classes of procurement were assigned to the geographically aligned Air Material Areas, decentralization of procurement operations began.

(2) Field Procurement. In 1961 a reorganization took place which resulted in the present Air Force Logistics Command (AFLC) and the Air Force Systems Command (AFSC). A major realignment of procurement occurred in 1969 when several Air Force Commands, in addition to AFLC and AFSC, were designated procuring activities and all Air Force commands and separate agencies were given unlimited procurement authority.

e. Defense Supply Agency (DSA)

The Second Hoover Commission 1953 to 1955 which resulted in the DOD Reorganization Act of 1958, also recommended the establishment of a separate civilian agency reporting to the Secretary of Defense to administer common supplies and services, including commercial items. While the recommendation was not fully carried out, DSA was

established and presently consists of five supply centers. The centers are commodity oriented as are the centers' procurement directorates. Virtually no field procurement is performed outside of the commodity centers.

f. General Services Administration (GSA)

One of the many recommendations made by the First Hoover Commission, 1947-1949, was for the establishment of a central organization to provide federal services including supply and procurement. Thereupon Congress enacted the Federal Property and Administrative Services Act of 1949, creating the GSA. In 1959 GSA established the Federal Procurement Regulation (FPR), developed cooperatively with the Department of Defense. Like the DSA Centers, the 10 GSA Regions are commodity oriented with virtually no field procurement performed outside of the regional offices.

3. DCAS--A Bellwether

A prefiguration of the concept espoused in this thesis is suggested after the foregoing comparison of diverse field procurement management philosophies. The Defense Contract Administration Service (DCAS), a field activity, interfaces with all procurement offices mentioned in this thesis. Information sharing need only be mandated by ASD(I&L) and the files of DCAS could be opened to the benefit of federal procurement. While sharing information is not one of the contract administration functions, and the ingress/egress of procurement data follows a rigidly structured path, its potential for raising the effectiveness of federal procurement is great [Ref. 25]. As will be discussed in Chapters IV and V, DCAS is regionalized and automated. By virtue of their charters, contract administrators are uniquely qualified sources of procurement information. They have access to pre-award survey data, cost data, performance history and other contractor data which if shared with buying offices could be of great benefit in the planning and execution of a procurement.

E. POINTS OF VIEW

1. A View of the Future

Early in the existence of Task Group 3-73, one of the contributors, Mr. J. L. McCormack, presented a view of a field procurement system of the future. The concept provided for a central, accessible computer main frame and data storage; provided both on-line and off-line capability of operations; made available real time use to a number of users; utilized standard current state-of-the-art hardware and software. In addition it was expandable for both data requirements and procurement operations; and was centrally located in an area, but not bound by it. Further, it was meant to provide procurement managers at various small, medium and control installations with the operating data they required to better manage the procurement function; and it envisioned operation of input/output devices by personnel of the procurement clerk typist caliber, with minimum on-site training [Ref. 18].

McCormack realized that to have an effective management system utilizing a computer, manual paper-flow systems must be well defined. While he recognized the need for standardization, his concept did not dwell on it.

2. A Practical Application

McCormack selected the general area of Dallas, Texas as the location of his central computer main frame. By coincidence, in the summer of 1974, the U. S. Air Force commenced a study to link 16 procurement offices located generally around Randolph Field, Texas but as distant as Mather Air Force Base near Sacramento, California. Unique in the DOD, the Air Force has implemented the Customer Integrated Automated Procurement System (CIAPS) at 56 bases in the Tactical Air Command, Air Training Command, Military Airlift Command and Strategic Air Command [Ref. 22].

CIAPS will be explored in depth in Chapter V. The system accepts purchase requests and provides delivery

orders and solicitations in an automated mode. Since its primary goal is to be more responsive to customer requirements, it was necessary that the relationship between all customers and the procurement offices be firmly established. It is in the standardization of command relationships that integration of the Air Force CIAPS begins to stall out.

3. Standardization--A First Cut

From the author's point of view, the previous two sections roughly circumscribed the problem barrier to the goal of this thesis, determined the modus operandi and some of the assumptions. The grand scheme for the integration of procurement by a professional in procurement, McCormack, and a well conceived plan to link stand alone systems together into a total logistics system by the Procurement Systems Division of the Air Force Design Center, pointed to the conclusion that standardization was one of the keys to regional automation of procurement. A new approach seemed to be warranted, namely, from the base of the functional organization up, rather than from the top of the mission command structure down.

Field level functional procurement managers should speak a common language because they must deal with the same contractor from time to time. For internal reporting, the manager may have to translate this common language into bureacratic acronyms required by his higher headquarters, but when his office is negotiating with a supplier, acronyms for the most part disappear, and word meaning had best be clear. It seemed to the authors that if this thread of commonality could be coupled with a concept of sharing information versus controlling the function, then a means to achieve more effective procurement could be possible.

4. Bidders Mailing Lists

Typical of that which the authors pursued as a common sub-function which could be shared at the field level was the Bidders Mailing List (BML). For DOD procurement

activities ASPR 2-205 sketches the requirement as does ASPM #2. At the field level of procurement, the showcase of modernity was a computerized BML, however, Task Group 3-73 found that BML's were not cost effective and presented an Army Audit Agency report to support its position.

The authors found the Task Group 3-73 conclusion substantiated to the degree that if the list was limited to only names and addresses of prospective suppliers, it was treated as strictly a clerical function, and not incorporated into the procurement professional's bag of tools. On the other hand when the list became a source of potential supplier information including price and performance history then it became an indispensable part of the procurement professional's routine. The authors found this to be true at Mather AFB which used CIAPS and at NSC Oakland which was not automated. Therefore, while recognizing the necessity of finding and exploiting a relatively simple common thread of information to be shared throughout a geographic area, it was believed necessary to expand the definition of BML to include the attributes of a source list.

With the BML so redefined and broadened, the authors attempted to gather lists in the San Francisco Bay Area to substantiate the hypothesis that the suppliers contained thereon were similar enough to make sharing logical. The next step would have been to convince that activity with the automated system to permit outside non-mission activities to extract source list information from the automated system in a non-disruptive manner. This scheme is more fully explored in Chapter VI.

F. CONCLUSION

Implicit in this study was the recognition that serious problems existed in the method by which federal procurement resources were being managed in the field. The research which follows argues against the status quo and argues for

the commencement of a dialogue between procurement managers and logistics systems planners. Accomplishment of an organization's mission will be enhanced through information sharing and this can be done without giving up procurement capability within the activity.

III. RESEARCH TECHNIQUE AND ASSUMPTIONS

This chapter presents the rationale which narrowed the focus of the project from one of envisioning a regionalized interactive computer network to a search for a basic procurement function or subfunction which could be shared by all users whether automated or not. It also presents the basic assumptions on which the thesis is based.

A. INTERVIEWS

The strategy which evolved was to determine which office in the Washington bureaucracy, if any, would be able to impose its will on federal procurement organizations and force them to use common procedures, common systems, and common data bases. A parallel determination was needed to discover, at the field level of procurement, a commonality of procedures, the extent of common systems, and the possibilities of common data. Therefore, the type of questions asked were predicated by the level at which the authors were seeking interviews. If the correspondent was a headquarters staffer, systems planner or designer, the question asked was, "Where was the power source from which integration of common procurement functions could be mandated?" If the interviewee was in the field, the quest for packets-of-data which could be shared was the issue as well as the feasibility of sharing information without sharing control. Appendix B lists those interviewed or who otherwise contributed to the project. With the data gathered from the interviews, the methodology was to define a region and then construct a model replete with information sharing techniques which could be exercised by changing the parameters of those techniques.

B. ASSUMPTIONS

The assumptions establish the environment in which this project was formulated. They are predicated on operational and technological forecasts, resource projections and anticipated DOD policies germane to a logistics system.

1. DOD General

a. Operational

Smaller forces will be supported. The DOD logistics system will be required to support the rapid deployment of operational forces and selected support capabilities to overseas areas. Modern capabilities such as rapid transportation, containerization, transportable ADP and telecommunications will be incorporated in the design of logistics systems.

In the Navy, pressures to reduce and realign the shore support establishment to more closely reflect the size of the fleet will be especially strong.

b. Managerial

Each military department will retain the major role in the management of its logistics support functions. Logistics systems of the military departments and agencies will become capable of accommodating an increase in functional inter-servicing. The expanding automated logistics system environment with its increasing process and systems orientation rather than functional orientation, will tend to fade traditional functional boundaries and foster more system oriented logistics management structures.

Mission responsiveness will continue to dominate planning of logistics support functions. Systems oriented logistics structures will continue to accommodate multiple mission oriented support activities, both within military departments and other departments and agencies.

2. DOD Resources Projections

Unless the probability of direct military confrontation increases, the DOD will receive a lesser percentage of the Gross National Product (GNP) for the next five to ten years; or, at best, defense allocations may stabilize at relatively the same dollar level, which will equate to declining defense resource availability because of inflation and increased weapon system cost.

Funding constraints will continue to accelerate trends toward achieving economies through centralization and standardization.

Efforts to reduce the operating costs of the shore support establishment through base closures, consolidation, and/or restructuring will continue.

In the Navy, efforts toward achieving more economic and efficient administrative operations and support will continue. These efforts will be directed toward aligning similar or closely related functions into optimum organizational arrangements, e.g., consolidation of accounting and disbursing functions for geographical areas into one activity, alignment of military personnel accounting with BUPERS military personnel administration, etc.

Realignment and consolidation efforts will continue to meet resistance from response oriented activities whose missions demand maximum control over all support functions to the detriment of sound business practice, e. g. competing for purchase of similar items from the same kinds of suppliers.

The DOD will rely primarily on the industrial and commercial production base of the United States, as opposed to expanding and maintaining organic capabilities. More material will be purchased for direct delivery to the end user.

Working capital funds will continue to finance procurement of expense type material, depot maintenance

operations, and defense transportation activities and other logistics service functions.

3. Technological Expectations

In land communications, analog transmission for high speed, high capacity systems will be replaced by digital transmission. Software developments will permit close machine interaction by casual users rather than skilled operators and facilitate the use of display terminals, possibly voice answer back from the computer data base for a simple inquiry response system using a touch-tone phone as a remote terminal.

Source Data Automation efforts will result in low cost data terminals that can be operated by personnel with little training.

Major growth will occur in the use of remote data access and entry systems, visual display terminals, data communications and high density data storage devices which will permit expansion of computerized corporate data base systems

Computer improvements will tend toward development of multi-level computers with some processing done at the terminal, some at first level computer (geographical proximity), some at second level computer (further away and more powerful), etc., with all processing done at the lowest feasible level in the network.

Standardization of data elements will facilitate installation and effective utilization of remote terminals for data input to and interrogation of integrated data bases.

Microform will be used increasingly for storage of hard copy information, accompanied by economical, space-saving methods to randomly store and retrieve data.

Memory systems will be developed permitting efficient and economical storage of data required for repetitive recall on an instantaneous basis.

C. CONCLUSIONS

Traditionally, within the public sector, the most controllable element has been DOD procurement expenditures. One could assume the mood of the country to continue to be one which no longer countenances defense for defense's sake. The question is asked, can current DOD systems managers maintain parochial views of their functions when those views create and sustain monolithic inward looking systems which are found to be duplicative within a geographic area? If the general and managerial assumptions listed above hold true, the answer to the question in the near term remains a resounding yes. In spite of exhortations promoting functional inter-servicing, the requirement for mission responsiveness will continue to dominate the choice, and the problem of inefficient use of new technology will continue. A favorable resolution of this problem is required to pacify those constituencies which support congressmen who view the DOD as inefficient and wasteful. This thesis offers the beginning of a solution which will permit growth of benefits through technology while departing from inefficient duplication and incomprehensible competition among federal agencies.

IV. REGIONAL PROCUREMENT

The history of the United States economy, indeed the history of the growth of this country, can be focused upon the growth of cities or more generally, large metropolitan areas and regions. Large cities have grown rapidly. Since the industrial revolution, the expansion of population, concentration of wealth, and increase in productivity and economic development have almost exclusively been identified with a large city or metropolitan area. The ramifications of such growth have been felt in social, political, economic and many other less amorphous problems which likely head the chapters of current government textbooks. The maladies which have afflicted the various regions of our nation are probably not fundamental problems in and of themselves, but rather reflect a lag in adjustment to the sporadic and uncoordinated changes in community structure. The focus of study in this chapter was not the problems of national growth nor the social, economic or political adjustments adopted to counter such problems, but rather to examine the various typologies by which regions are defined with particular attention to and emphasis upon aspects which might relate to procurement.

A. THEORY OF THE REGION

1. Metropolis

The concept of "region" was not clearly defined at the outset of the study. There was a visceral idea which seemed to be agreeable to the authors and most conferees, but the bounds or structure of such an idea were never explicit. The most nearly congruent description of this concept is provided by Duncan, et al in their concept of "metropolis" [Ref. 10]. The concept of "metropolis" or "region" does not belong to any one writer or school of thought, and it is used so widely and diffusely that there

is liberty to define it in any way suitable for the purposes at hand. There is, of course, no possibility of determining what a region "really is", even in a statistical sense. It can be safely said that a region is not the creation of any governmental body nor the result of some bureaucratic process. Quite the contrary may be the case. That is, governments, especially those below the federal level, probably have and will continue to wrestle with the task of structuring and fitting governments to the realities of a regional community structure. Witness the prolonged and acrimonious struggle with redistricting of congressional seats in recent years.

2. Economic Criteria

A convenient starting point in developing a typology for definition of a region is the work of N. S. B. Gras [Ref. 14]. His criteria were economic in nature and quite general to permit a relatively wide range of operational constructs to be directly developed. Gras sets forth five forms of general economic organization: (1) collectional economy; (2) cultural nomadic economy; (3) settled village economy; (4) town economy; and (5) metropolitan economy. The last of these, metropolitan economy, is a more recent concept and is based upon an internal organization of productive forces and an external relationship with other units either of the same order or of more primitive form. The internal organization is made up of a commercial city as nucleus and a large surrounding area sometimes referred to as hinterland. The relationship between the hinterland and the nucleus city may be one of varying degrees of dependence, but it does not preclude further dependence on other regional units. In fact, one of the chief functions of such a metropolitan unit is to establish and maintain communications with other units as may be necessary and desirable. In a more general sense, the economic region arises at a favorable conjunction of two circumstances, the economic development of the hinterland, and the increased

business ability and organization of the nucleus city. It should be pointed out that Gras's formulation identifies a region as a spatial unit and suggests considerable size as a salient feature, whereas it is neither spatial structure nor size but rather function which identifies the hallmark of his suggested region. The physical boundaries would then seem to be defined as the distance from the nucleus city extending into the hinterland only so far as there is economic or business communication. Gras clarifies this notion by arguing that although one tends to emphasize the large nucleus city of a region, while forgetting the large dependent district, there is a true interdependence between the two. It is this economic interdependence, the city upon its surrounding region and the region in turn upon the city, that is the key to his framework.

3. Transportation and Spatial Criteria

The concept of "metropolitan region" developed by McKenzie [Ref. 19], although related to and partly derived from Gras's formulation, placed greater emphasis upon settlement pattern and the role of automobile transportation in integrating the elements of a metropolitan region. In a general sense, McKenzie's region probably would have made up a smaller area than the hinterland described by Gras. McKenzie reasoned that the region described by his criteria emerged from a pattern of formerly semi-independent units as a direct result of motor transportation and its revolutionary effect on local spatial relations. The proliferation of the automobile coupled with the expansion of the highway system and other methods of travel and communication brought the city and its hinterland into a closer functional relationship. McKenzie maintains, as did Gras, that a region is primarily a functional entity. The geographical boundaries of such a region extend only as far as the city exerts a dominant influence into its hinterland. McKenzie observed that a metropolitan region represents a constellation of centers, the interrelations of which are

characterized by varying roles of dominance and subordination. Every region defined by such a framework is organized around a central city or focal point of dominance in which there are institutions and services which cater to the region as a whole and afford integration and communication with other regions. Two terms come into common usage to designate zones of communal influence: (1) metropolitan area; and (2) trade area. The "metropolitan area" came to signify the area in which the local economic and social activities and functions are carried out through a system of local institutions. Immediate examples of such functions include public services such as water, light, sanitation and telephone which tend to define a general common service region. The second concept, "trade area", usually designates a more extended area of city influence. In the functional sense, a trade area is defined as the surrounding geographical territory which is economically tributary to a city and for which such city provides the chief market and financial center.

4. Organizational Structure

A third theoretician of metropolitanism and regionalism was Bogue [Ref. 5]. He was apparently influenced by McKenzie's emphasis on local spatial relations, and the focus of his work was on the internal structure of a metropolitan community. Bogue maintains that a metropolitan community is an organization of many mutually interdependent and inter-functioning subcommunities oriented about the hinterland cities, which in turn, are sub-dominant to and interdependent with the dominant metropolis. The entire region seemed to be held together by a system of community specialization and the exchange of locally produced surpluses. There was an initial inclination to categorize Bogue's view as one of an agricultural bent, but in retrospect, such interdependence could be evidenced with respect to levels of production or activity in manufacturing, trade, and service industries. Bogue

concluded that every zone of the hinterland is dependent upon the region for wholesale trade and services, and that other regions are dependent upon the focal city for communication with the assets of its hinterland. The impression might be gained that Bogue has described an isolated state which constitutes a self-sufficient system. Bogue recognized this possibility and took pains to refute such a conclusion. The national economy, indeed the world economy, exists due to each metropolitan region diffusing its specialization by trading with other regions, be they states, metropolises, or even nations of the world.

5. Statistical Regions

Given the variety of criteria for defining a region, it is not surprising that there should be a goodly number of schemes for delimiting spatial units. Beginning with the economic and population censuses of 1947-1950, government statistical agencies have made extensive use of the concept of "standard metropolitan statistical area" (SMSA) [Ref. 9]. Because many statistical series have been reported for these units, the criteria for definition are worthy of mention. The SMSA concept had a number of predecessors in previous attempts to delimit statistical areas, recognizing functional entities extending beyond the corporate boundaries of large cities. The SMSA is essentially an operational specification of what McKenzie called the "metropolitan area". It starts out with a city of 50,000 or more, and includes the whole county containing that city. It also includes any contiguous county that meets the criteria of a metropolitan character and of economic and social integration with the central county. The "metropolitan character" of counties was ascertained from the numbers and proportions of nonagricultural workers, and the "integration" with the focal center was inferred from information on commuter traffic and telephone calls between central and outlying counties. Roughly speaking, the SMSA may be interpreted as a commutation area, a housing market

area, and perhaps even more importantly, a labor market area.

B. FEDERAL PROCUREMENT AND THE REGION

Having explored the theory of regions and metropolitan areas, the next logical effort was to investigate the application of such theory to regional procurement. It is recalled that the genesis of this thesis was found in one of the monthly status reports written by the chairman of Task Group 3-73, whose subject was Automation in Procurement [Ref. 36]. In his report of 16 July 1973, the chairman made a brief comment in the overview summary statement paragraph which launched the effort on this thesis. The comment stated that greater use of regional procuring and regional management and control of procurement, would foster economies and increase the feasibility of using automated techniques in the procurement process. The comment was made after an extensive review of the Navy's Field Purchasing Organization which consisted of approximately 66 major and 135 minor purchasing activities throughout the world. The concept of greater use of regional procurement was not thought of solely in terms of application to the Navy. The implications of the previously discussed theory of a region to the realities of procurement in the federal government became the next logical subject for study.

1. Civilian Agencies

With respect to volume of procurement actions, local purchasing in the federal government as accomplished by the civilian agencies generally involves procurements under \$2500. These procurements are for common type commodities, supplies, and services for the operation and maintenance of offices and installations. Requirements are generally obtained through the General Services Administration or on the open market. A noteworthy study for the Commission of Government Procurement brings out some salient findings regarding centralization versus decentralization of local

purchasing [Ref. 28]. The report was organized and presented its findings in two distinct categories: (1) civilian agencies; and (2) Department of Defense. The reasoning for such a structure was not made clear other than a brief statement that the items procured by the civilian agencies are generally different from those procured by the Department of Defense. The report found a multiplicity of local small purchase offices of civilian agencies in the major cities of the country. The following listing shows a range of from 14 to 23 local purchasing offices in a city. [Ref. 28].

<u>Federal</u> <u>Regional</u> <u>City</u>	<u>Offices</u>
Atlanta, Georgia -----	14
Boston, Massachusettes -----	16
Chicago, Illinois -----	18
Dallas/Fort Worth, Texas -----	17
Denver, Colorado -----	18
Kansas City, Missouri -----	14
New York, New York -----	20
Philadelphia, Pennsylvania -----	16
San Francisco, California -----	17
Seattle, Washington -----	18
Washington, D. C. Area -----	23

It was estimated that there are 29 cities with five or more purchasing offices in which centralized federal procurement offices could be established. These offices and their requisitioners are generally located in close geographic proximity. In some cases, they are located in the same building. As a result of this fragmentation of procurement, and of particular interest to the subject of this thesis, the report noted a lack of utilization of common automatic data processing equipment in the local purchase area. The Commission presented a detailed analysis of the civilian agency purchasing offices in Atlanta,

Georgia and San Francisco, California. The establishment of a "Federal Regional Area Purchasing Office" was proposed with concomitant withdrawal of procurement authority from the civilian agencies in that area. Quantitative justification was put forth based on estimated dollar savings by reducing numbers of personnel in procurement. No estimate was made of savings as a result of reduced material cost through consolidation of requirements, standardization, etc. The case for centralization of local area purchasing was further supported by the fact that some of the largest industrial corporations and state governments had already centralized the procurement of local supplies and services.

2. Department of Defense

The Commission likewise pointed to a multiplicity of local area/base purchasing offices in the Department of Defense in particular areas. The following listing shows a range of from three to 15 local purchasing offices in a city [Ref. 28].

<u>City</u>	<u>Offices</u>
Atlanta, Georgia -----	5
Boston, Massachusettes -----	5
Chicago, Illinois -----	5
Denver, Colorado -----	4
Los Angeles, California -----	6
New York, New York -----	7
Philadelphia, Pennsylvania -----	9
San Antonio, Texas -----	5
San Francisco, California -----	6
Seattle, Washington -----	3
Washington, D. C. Area -----	15

It was estimated that there are 44 cities or areas in which a centralized "Department of Defense Area/Base Purchasing Office" could be established. In similar fashion to the civilian agencies, the report presented a detailed

analysis of the military purchasing offices in the San Antonio, Texas area and the Panama Canal Zone. Significant reductions in the number of procurement personnel were proposed and the resultant dollar savings estimated. The report concluded that due to the multiplicity of local area/base purchasing offices in the major cities engaged in similar type purchasing activities and resulting in overlapping and duplication of activity, that there were advantages to be gained by centralization. The establishment of Federal Regional Area Purchasing Offices and Defense Area Purchasing Offices was recommended.

The total number of procurement offices in the various cities, both civilian and military, reveals a further multiplicity of effort and duplication of function. As will be discussed later, the reasons for such duplication and monolithic organization and functional structure, reveal problems which must be overcome. The extraction of the procurement function from an organization that generates requirements generally implies the need to establish a number of procurement liaison positions. Therefore any savings realized by consolidation of procurement must be offset against the added cost of such a liaison effort.

It is obvious that the Commission on Government Procurement was presented arguments and conclusions which implicitly classed the various concentrations of procurement offices as central metropolitan cities. It might easily be inferred that such centralized federal procurement offices would be charged with performing the procurement functions for other federal agencies further geographically removed from such a city. If such is the case, a region has been defined in the same sense as the functional regions of Gras and McKenzie.

3. Existing Federal Regions

The federal government, through various processes and agencies, has divided the nation into a number of regions. The most obvious delineations are political or

geographic and determine the boundaries of the fifty states, which are in turn divided into counties, towns, cities and other divisions of a governmental nature. The purpose of such division is usually to provide ease and efficiency of local government and fair representation in such government of citizens residing in close proximity to each other. The criteria for establishing or modifying such political regions is not geographic, but functional in nature. The Constitution of the United States sets forth the criteria for statehood and grants limited sovereignty to the states. Thus the states can organize and authorize subordinate regions and governments for whatever reason or function deemed necessary. But except for the impact of legislation and regulation imposed by the various political regions, their functional organization hardly seems compatible with definition of a region for a procurement function.

More closely aligned to the procurement function is the regional organization of the General Services Administration (GSA). The GSA divides the country into ten regions, each of which consists of one or more states or portions of states. The Federal Supply Service (FSS) of GSA is generally responsible for procurement, storage, issue and disposal of all items of supply common to agencies of the federal government except items unique to the Department of Defense. The criteria for defining each GSA region seems to be the result not of any classical or theoretical construct, but rather a balancing of workload among the existing regions. That is, if one region is experiencing a consistently heavier workload than another, there tends to be actions and negotiations resulting in the transfer of territorial responsibility between regions to enable a more equitable workload. There is an implication recognized that the bureaucratic organization of GSA tends to perpetuate its regional headquarters staff positions and attendant management hierarchy, even if some territory needs to be "bought" from a neighboring region to justify its existence.

During a visit to the GSA Region 9 Headquarters in San Francisco, it was revealed that GSA has shifted its emphasis in the FSS from a regional responsibility to a commodity specialization. Instead of each regional headquarters providing complete supply service to all customers in its region, each region will be designated as specialist for a group of commodities, and will be responsible for purchasing and managing those commodities for all GSA customers throughout the country. It can be concluded then, that the criteria for regional definition in GSA, which performs a major procurement function for the federal government, is not related to a procurement region of some kind, but rather attempts to perpetuate an existing bureaucratic structure by varying the size of regions as necessary.

Various other federal government regional schemes were considered during the course of this study in an attempt to find a common thread or factor for use in defining a procurement region. The effort met with less than singular success. The most obvious subject for study and the initial effort was directed toward the Navy Regional Procurement Offices (NRPO) and NRPO Oakland in particular. Other Navy regional demarcations include the various naval districts, the shore based support force such as Naval Supply Centers, Navy Regional Finance Centers, regional divisions of the Naval Facilities Engineering Command, and more recently, the various Navy Regional Medical Centers. The other military services appear to function with much more centralized management and control. The Defense Supply Agency has decentralized the storage and disposal function and has segregated management by commodity classification. The Defense Contract Administration Service (DCAS) is subordinate to DSA and enjoys decentralized management and control. The Defense Contract Audit Agency (DCAA) is likewise segregated into regions. The DCAS and DCAA have defined regions in relation to concentrations of defense contractors and it was generally concluded that each such

region investigated was defined in a functional sense. That is, the region was defined in terms of the function or mission of the organization, presumably to enhance the effectiveness and efficiency of the organization's performance. In such a functional sense, the government and military regions conform to the theory and basic structure of regionalism and metropolitanism discussed earlier. The focus of the regions studied were not necessarily large cities but perhaps concentrations of military bases, ships, or other strategic localities. Thus a model of a ready-made functional structure was not discovered.

C. THE SAN FRANCISCO BAY AREA

As referred to in Chapter I, the outset of research for this thesis included a presumption that the San Francisco Bay area might provide an excellent model to investigate the feasibility of sharing procurement information on a regional basis. The area was attractive in that it is a relatively short distance from Monterey affording ease of travel when needed and a degree of flexibility of schedule. A goodly amount of productive research could be completed by a visit to the area on the same day as round trip auto transportation. Further, the abundance of military installations in the vicinity permitted ease in developing initial contact and rapport with experts in the various topics. A rather detailed analysis of the San Francisco Bay area with regard to both the theories of the region and potential government regional procurement applicability follows.

1. Population

The San Francisco Bay area was defined by the Security Pacific National Bank in a 1971 report, as the nine counties surrounding the San Francisco Bay [Ref. 29]. With a total population of nearly five million people, the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma

provide an employment base of nearly two million. There are four leading employment categories, each accounting for about one-fifth of the area's total employment: services, trade, government, and manufacturing. Over 90 percent of California's population lived within a Standard Metropolitan Statistical Area (SMSA). There were 14 SMSA's in the state, composed of 22 of California's 58 counties. Within the San Francisco Bay area, eight of the nine counties were included in three separate SMSA's. The 1970 census indicated that the ninth county, Sonoma, should have been designated an SMSA.

The greatest concentration of population is within the five county San Francisco-Oakland SMSA. The 1970 census indicated that the area ranked sixth among the nation's metropolitan areas in terms of population, behind New York, Los Angeles, Chicago, Philadelphia and Detroit [Ref. 33]. The Bureau of the Census recognized that in some instances the metropolitan areas blend together to become metropolitan regions. Two Standard Consolidated Areas have been designated: New York-Northeastern New Jersey and Chicago-Northwestern Indiana. With Sonoma County now meeting the criteria for SMSA designation, it might be surmised that the Census Bureau will soon recognize the nine Bay area counties as a unified metropolitan region and designate them the San Francisco Bay Standard Consolidated Area.

Federal, state, and local government constituted the third largest employment category in the region and during the decade of the sixties, experienced the second fastest growth. Alameda County lead the area in government employment. Military and civilian employment in the Department of Defense and employees of the University of California contributed to Alameda County's total of 100,500 workers.

2. Transportation

It is most difficult to overstate the importance of transportation both in the development of the San Francisco Bay area and in unifying the region as an economic entity. San Francisco's first major economic role was that of a port and shipping center during the days of the Gold Rush [Ref. 27]. With the completion of the transcontinental railway in 1869, Oakland became the great western terminus of the nation's rail system. The deep natural harbors of the San Francisco Bay provide the location for seven general purpose sea ports at Alameda, Oakland, Redwood City, Richmond, San Francisco, Benicia, and Pittsburg. The prosperous and progressive Port of Oakland became second only to New York in volume of containerized cargoes. Located in the region are three major airport facilities as well as more than 30 municipal and private fields. More than 25 airlines serve the three major airports, and among the nation's metropolitan regions, the area ranks fourth in passenger traffic.

The foregoing discussion lends credence to the San Francisco Bay area as a focus of commerce and communication with other regional centers of the nation and the world. A closer look at urban transportation, trade, and financial activity will show that the region can surely qualify as a region or metropolis in the sense discussed by earlier theorists.

Automobiles are by far the preferred mode of transportation throughout the region. They account for more than 75 percent of all weekday trips while public transit accounts for only eight percent [Ref. 29]. The highway and bridge systems have made possible the dominance of the automobile and tend to define the commuter or labor market boundaries of the region. Over 500 miles of freeways and seven trans-bay bridges link the nine counties of the region. More than any other factor, the bridges have made the Bay area a true urban region. For the year 1970,

traffic volume on the seven bridges exceeded 135 million vehicles.

No discussion of the area transportation system would be complete without mention of the Bay Area Rapid Transit system (BART). Having completed a 75 mile network linking Oakland and San Francisco by a trans-bay tube and extending as far north and east as Concord and as far south as Fremont, passengers may travel at speeds up to 80 miles per hour, and choose trains as frequently as every 90 seconds during peak hours. BART is but one more indication that the region surrounding the San Francisco Bay is in fact an economic and functional region adaptable for consideration as an entity for almost any purpose.

3. Retail Trade and Services

The San Francisco Bay area is regarded as one of the leading consumer markets in the nation. Total retail trade amounted to \$9.8 billion in 1970 accounting for 23.6 percent of all California's sales [Ref. 29]. The taxable retail sales figures which are reported quarterly by the California State Board of Equalization approximate 70 percent of the total dollar volume of all retail trade in California. Excluded are those items exempt from state sales tax, primarily food for off premises consumption, gasoline and prescription drugs. The San Francisco Bay area's taxable retail sales in 1970 amounted to \$6.9 billion for a gain of 2.7 percent over 1969. The area's taxable sales have increased by \$3.2 billion during the 1960 to 1970 period, an increase of 86 percent. This was somewhat higher than the state's rate of growth for the same period.

The movement of the population to the suburbs during the past decade has resulted in significant changes in the distribution of retail sales among the bay area counties. Alameda and San Francisco counties were the only counties registering a decline in their share of the region's taxable sales between 1960 and 1969. Obversely, the sales in Santa Clara County, the bay area's fastest growing county during

the decade of the sixties, increased its share by 4.5 percent during that period.

The emergence of the large suburban regional shopping center with the major full line department store as a nucleus, has been the major factor in the shift in shopping patterns away from the central city business districts. Efforts to slow this trend are underway in several central cities through major redevelopment projects that include in their plans combined commercial, residential and retail facilities to serve their population.

During the five year period from 1964 to 1969, taxable sales by retail stores in the bay area rose by \$1.9 billion, or 39 percent, to reach \$6.7 billion by 1969. The largest dollar increase among the eleven major retail categories occurred in general merchandise stores which gained \$413 million in that time span. Auto dealers and suppliers were second with \$306 million, followed by food stores with \$229 million. The fastest growing category, in terms of percentage, was food stores which recorded an increase of 56.9 percent in sales to \$632 million in 1969. The largest retailer in the bay area in 1969, based on the dollar volume of taxable sales, is the department and dry goods stores group which had sales of \$1.07 billion. By far the largest retailing city in the area is San Francisco, whose sales more than double that of second ranked oakland. In 1969 there were eighteen cities in the bay area that recorded taxable retail sales in excess of \$100 million. This compares to four such cities in 1960.

The phenomenal growth of the service industry over the past decade has been stimulated by increases in leisure time, higher disposable income, and the desire on the part of the populace for more enjoyment in life. These factors combined have made services the fastest growing industry, not only in the bay area, but in California and the nation as well. The U. S. Department of Commerce, in its 1967 Census of Business, reported that 30,360 service

establishments in the bay area recorded total receipts in excess of \$1.9 billion in 1967. Total employment of the bay area services industry, which includes wage and salary workers, self employed, unpaid family workers, and domestics, amounted to 422,500 in 1970, a gain of 62 percent since 1960. The 1969 service payrolls were in excess of \$1.5 billion for the region, representing almost one-fourth of the state's total. The largest portion of the bay area's service employment is centered in miscellaneous business services and medical and health services. Hotels and other lodging places, personal services and some miscellaneous categories have also recorded impressive employment gains in recent years.

4. Military

The San Francisco Bay area economy has benefitted substantially by the location of many military establishments within its boundaries. The Navy and Army have the largest representation in the region. Total military personnel stationed in the bay area totaled 110,046 in 1969, down 3.6 percent from the record total of 114,130 in 1967 [Ref. 29]. The military complex in the region contributes important payroll dollars to the economy as well as creating thousands of jobs for civilian workers. Although precise data for recent years was not obtained, the end of involvement in Vietnam and DOD spending reductions have been in real evidence in the bay area. Data for fiscal year 1969 indicated that total military spending in the region exceeded \$3 billion, with nearly \$850 million of this total disbursed for military and civilian payrolls.

Each of the nine bay area counties benefits from defense expenditures. Santa Clara County, however, is the leader in this area achieving the billion dollar mark in both the 1968 and 1969 fiscal years. Santa Clara County accounted for 42 percent of total defense expenditures in the bay area during that period. Alameda and Solano Counties are the bay area leaders in terms of total military

personnel with 38,505 and 38,144 uniformed personnel respectively, in 1969. In addition to active military personnel, Alameda and San Francisco Counties also have a substantial number of retired personnel living within their boundaries. Total payrolls for retired personnel accounted for \$102.3 million in 1969.

The San Francisco Bay area accounts for one-fourth of the total number of military personnel stationed within the state of California. During the 1960-1969 period, the percentage distribution of military personnel stationed in the various regions of California had changed very little.

Military expenditures by the Department of Defense constitute the leading category of federal outlays in the state of California. The federal government spent \$10.6 billion in fiscal 1969. The bulk of this spending occurs in the form of prime military contracts. With defense spending on a downward trend, however, the long range effect of recent budget cuts will depend a great deal upon Congressional assessment of national priorities.

D. CONCLUSION

As a result of the research conducted and facts gathered in the preparation of this thesis, it appears that the San Francisco Bay area in fact conforms to the theoretical construct of a region. More importantly, it is considered a functional region for various purposes, not the least of which is a concentration of military and other government agencies. Theory and practice seem to indicate that as a nation we tend to cluster into regions of activity. In a somewhat artificial way, government agencies have tended to adapt to this natural phenomenon by creating regional organizations. By recognizing this tendency and considering such organizations on a regional scale as opposed to national consolidation, advantages such as those gained from the sharing of procurement information gain clarity and credence. Opportunities to capitalize on the metropolitan

nature of the region through the concept of information sharing in government procurement will be pursued in the following chapters.

V. AUTOMATION IN PROCUREMENT

An integral part of the model building process must be the research and analysis of existing and planned applications which might relate or directly bear on the concept of information sharing. In each system examined, the search was for some common thread which might lend that system or one like it the ability to share information. It must be recalled that the idea of information sharing on a regional basis was constrained only in that the emphasis was to be upon procurement and the use of automated techniques. But in order to achieve a conclusion based on a logical progression of research, a thorough understanding of general efforts in the field of automation in procurement was in order. The research conducted by Task Group 3-73 of the LSPC has proven to be a valuable tool in this regard [Ref. 36]. From the wealth of investigation and research effort by the Task Group, a number of automated systems have been selected for particular study, analysis, and critique. Therefore, this chapter will review and critique both applications of procurement automation and the Task Group 3-73 report for the purpose of trying to relate these efforts to the concept of information sharing.

A. EXISTING APPLICATIONS

There were several automatic data processing (ADP) systems explored associated with the material acquisition and procurement functions. The following is a synopsis of several of the applications reviewed.

1. U. S. Army

The U. S. Army currently has three automated systems associated with the procurement function: Commodity Command Standard System (CCSS); Safeguard Management Information System (SMIS); and System-Wide Project for Electronic Equipment at Depots Extended (SPEDEX).

a. Commodity Command Standard System

CCSS is a totally integrated logistic management system, containing data files for material management, procurement, and financial management. It was designed to accomodate the DOD Military Standard Contract Administration Procedures (MILSCAP) by automatically producing transactions and reporting information to remote contract administration offices, and operates primarily on MILSCAP type input such as shipment performance, slippages and disbursements. But if or until MILSCAP would be implemented, all performance input to CCSS must be manually prepared and is of use only to procurement personnel at the commodity command concerned. CCSS was designed to prepare procurement requests (PR's) automatically based on a supply control study. This segment of the system has a flexible dollar value parameter which can be pre-set or adjusted at will. When the PR dollar value exceeds the pre-set dollar parameter, it is held in suspense and a flasher card is produced for review by the material manager, who has three options: (1) approve the PR and release it as produced; (2) change the quantity on the PR; or (3) cancel the PR. If the PR is within the dollar value parameter, the system automatically certifies stock fund money for the procurement. When the requirement is manually prepared, CCSS will automatically produce the PR, regardless of dollar value, but the certification of funds must be accomplished manually. When a requirement for an item is generated, the system automatically checks the item for a code indicating that it is covered by a Basic Ordering Agreement. If so, a delivery order is prepared instead of a PR. Another part of the system involves what is called semi-automatic purchase/delivery orders. In this operation, the PR is reviewed and a vendor is selected manually, the computer prepares the purchase order and updates such files as contract master file, obligation data, and delivery schedule. CCSS provides management reports for functional directors within the commodity command as well as for higher

headquarters. The system is designed to use remote inquiry devices, and it is this feature which attracted attention during research for this thesis. Such remote inquiry is the logical tool through which various users within a region could be tied together. But alas, no remote devices were yet installed. An additional weakness of CCSS includes the fact that the system was only run twice per week, severely limiting the flexibility of the commodity manager. The system was fully operational at the U. S. Army Aviation Systems Command and the U. S. Army Missile Command, and portions of it had been installed at the U. S. Army Troop Support Command. CCSS was scheduled to be installed at all commodity commands by the end of calendar year 1975. The system was centrally designed by the U. S. Army Material Command Automated Logistics Management Agency, St. Louis, Missouri. Due to the drawbacks in the system as described and the fact that the remote inquiry capability remained some distance in the future, further analysis as a possible model with a regional concept was not pursued.

b. Safeguard Management Information System

SMIS is a total defense system, as opposed to purely logistics. It interfaces with a financial data system and was designed to support the Safeguard Missile Program. Programmed and developed by contractor personnel, the system has remote inquiry capability and contains a logistics management data subsystem. Such subsystem identifies data needed by the government to ascertain the status of contractor-furnished maintenance and logistics support at the site of the Safeguard system in Grand Forks, North Dakota. A centralized data base is maintained that provides current status on all PR's and all engineering change proposals. Task Group 3-73 evaluated SMIS as the best system of those visited by the group. Attractive features include real time capability and remote access. Not mentioned by the Task Group but readily apparent by reading investigative reports on all the current automated

logistics systems, is the fact the SMIS is a unique and separately built system, designed and funded without reference to other U. S. Army or DOD systems whether operational or in development. It can only be presumed that the strategic importance attached to the anti-ballistic missile system weighed too heavily to rely on other systems. SMIS stands as a glaring example of a monolithic effort at automation, no matter what the reasons for it may be.

c. System-wide Project for Electronic Equipment at Depots Extended

SPEEDEX was designed to be as extensive a system as possible for depot operations. An adjunct to such a depot system is the depot procurement and acquisition history system, which accomplished the preparation and processing of PR's up to \$2500, and the accumulation of procurement history and contractor performance data. Automatic commitment and obligation of funds is a feature as is the compiling of procurement statistical data for management reports. SPEEDEX is a standard system employed at designated depots and provides for the interchange of procurement history among the depots utilizing the system. It is this latter feature which identifies one of the most basic functions to be exploited in a regional application. Chapter VI explains this concept. Interestingly, the SPEEDEX system was actually operational and running on a daily cyclic basis.

2. U. S. Navy

The Navy had several significant automated systems which were studied. Task Group 3-73 provided insightful descriptions of most of the systems including the Uniform Automated Data Processing System for Inventory Control Points (UICP); Conventional Ammunition Integrated Management System (CAIMS); Contract Administration System (CAS); Material Acquisition System (MAS); and Procurement Accounting and Reporting System (PARS).

a. Uniform Automated Data Processing System for Inventory Control Points

UICP was designed to assist functional managers in the efficient operation of the Navy inventory control point. Functions include provisioning, cataloging and material identification, world-wide inventory control, weapons system management, repairable management, procurement, and financial management. UICP was designed and programmed by the Navy's Fleet Material Support Office. The system is in operation at the two Navy inventory control points, Ships Parts Control Center in Mechanicsburg, Pennsylvania, and Aviation Supply Office in Philadelphia, Pennsylvania. UICP features a single standard data base on mass random access storage devices with supporting tape files and direct on-line remote inquiry. The system can further be monitored by higher levels in the chain of command by on-line remote inquiry devices. Among various UICP subprograms is the Purchase Program. This package includes a buying operation and a contract administration function. The buying operation was designed to provide automated procurement documentation in accordance with ASPR and provides for production of requests for quotation (RFQ's), priced and unpriced purchase orders, delivery orders under indefinite delivery contracts, and contract modifications. The contract administration operation provides a files maintenance function and facilitates the administration of ICP contract. The program primarily accomodates supply item contracts generated for stock replenishments, MILSTRIP requisitions, provisioning and maintenance. The program also is responsive to supply demand review by expediting, reallocating and terminating supply actions. The inputs are matched against internal files to obtain additional data. It will then generate expedite, reallocation and cancellation actions, maintain mechanized files that reflect procurement data and contract status.

Another subsystem of UICP is the G03 (Accrual Accounting) system. This is a financial management system which operates in a real-time mode. It tracks each buy initiated by the procurement program or accepts off-line commitments, and assigns dollars and appropriations to be charged. G03 has a complete audit trail capability as well as generating the appropriate management and financial reports. Applicable to stock fund transactions only, the system was designed to operate at the line item level for contracts, or at the contract level itself.

b. Conventional Ammunition Integrated Management System

CAIMS was designed to provide a single point of reference for information as to world wide status of Navy expendable non-nuclear ammunition. In addition to providing real-time service to appropriate managers in various Navy activities, the system will serve other services on direct deliveries resulting from Military Interdepartmental Purchase Requests. Remote inquiry devices were planned for Washington, D. C., Virginia and Hawaii.

c. Procurement Accounting and Reporting System

PARS was designed exclusively for the procurement appropriations. Scheduled for implementation in 1974, the system will disclose a full range of financial functions at the required level of detail for improved management of procurement appropriations. It should provide an effective basis for control of funds, property and other assets for which recipients of procurement funds are responsible.

d. Contract Administration System

CAS was developed by the headquarters of the Chief of Naval Material, and is a system in which key data elements in functional areas of contract administration, production, accounting and finance will be standardized, automated and interchanged between procuring offices, inventory control points, and contract administration

activities. This technique was intended to reduce the flow of hard copy documentation and improve the timeliness of obtaining current information. The CAS data bank makes machine processing available to all levels of the various systems commands within the Chief of Naval Material organization, to applicable contract administration components, and disbursing offices. It contains appropriate data from all contractual documents executed by the systems commands. The system was envisioned to alert material managers, system acquisition managers and other management personnel of actual or anticipated actions. CAS will produce exception reports which will provide management with various situation conditions upon which to make management decisions relative to customer requirements, determining the need for contract modifications, extending delivery schedules or termination actions. It has the capability of providing management with statistics for use in evaluating workloads, indicating responsiveness to system command managers, and determining responsiveness of contract administration offices in performance of their mission.

e. Material Acquisition System

MAS was also developed by the headquarters of the Chief of Naval Material. It is an integrated management information system for impelmentation in the various systems commands to provide for: (1) current, accurate data tailored to individual systems command requirements; (2) early identification and notification of impending problems in the acquisition or procurement process; (3) automatic collection and update of data once for multiple uses; (4) immediate access via remote terminals; and (5) reduced cost for maintenance and production of large reports. MAS contains a PR tracking system which covers 40 milestones in measuring progress from the point of origin through the award of the contract. This provides information to managers on the status of documentation as it progresses through the various stages of the procurement process. Once

the data is captured in the computer, it is retained for use in further processing. MAS interfaces with CAS providing users of both systems up-to-date information and status of a PR at all times.

f. Automated Clause System

Task Group 3-73 identified two field level automated systems which had been developed and implemented exclusively in the field. NRPO Oakland had automated the preparation of contract clauses for inclusion in its solicitation packages using the IBM Magnetic Tape Selectric Typewriter (MTST) hardware. NRPO Long Beach was performing a similar function using REDACTRON equipment instead of MTST. The NRPO Oakland system was investigated in some detail by the authors, not because of the automation of contract clauses, but due to the fact that NRPO Oakland was sharing clause tapes with NRPO Philadelphia. It was learned that at Oakland, the office of counsel had developed an index of contract types replete with current required clauses which was stored on magnetic tape. The clauses could be selected by the typist for automatic typing with insertion of pertinent variable data. The document was then ready for signature by the contracting officer without current review. Whatever savings gained by this system by obviating much repetitious proofreading of manually typed documents are multiplied many times by the exporting of clause tapes to other procurement offices.

3. U. S. Air Force

Task Group 3-73 reported that the Air Force automatic data processing systems were particularly interesting. Currently operating systems included: Acquisition Support and Interim MILSCAP System (J041); Air Force Logistics Command Appropriation Accounting - Central Procurement (CP) System; Automated Small Purchase System (J023); Acquisition Management Information System (AMIS); and Customer Integrated Automated Procurement System (CIAPS). The latter was of such interest to the authors

that a visit to the CIAPS operation at Mather Air Force Base was conducted. CIAPS thus enables much more definitive description and more critical conclusions to be drawn.

a. Acquisition Support and Interim MILSCAP System
JO41 is a system that tracks and controls logistics requirements from the time a determination to buy is made through the procurement process to the closing of the contract file. The entire acquisition function of management and administration is automated. It tracks the PR from initiation in the Air Force Directorate of Material Management to release in the Directorate of Procurement and Production. The system provides status and workload information and establishes the "PR on order" asset position. In addition to servicing procurement and production, the system interfaces with the finance and accounting system.

b. Central Procurement System
CP applies to all central procurement fund transactions, including systems support stock fund, and Air Force industrial fund. CP records and processes all financial transactions, such as contract obligations, commitments, disbursements, and initiations and allotments. The output products of the system are designed to show net totals of fund status and transaction categories and is designed to interface with JO41.

c. Automated Small Purchase System
JO23 provides for computer processing of purchase requests, solicitations, and delivery orders from requirement generation to contract preparation. Benefits generally accrue to the inventory manager and the controller, although output products include management summary reports for procurement, transportation, packing and preservation, and quality control. It contains an automated small purchase file and a manufacturer's name and address file. A major system improvement, not yet implemented, is an automated delivery order output that, based on a file of

pre-priced contracts, will automatically produce a delivery order and eliminate steps and documentation relative to PR processing and pre-procurement review.

d. Acquisition Management Information System

AMIS is a two-part Air Force Systems Command (AFSC) system described as Phases I and II. Phase I supports the AFSC contract administration function and production function as well as reporting to various DOD buying activities. The data base is primarily contract administration type data and has MILSCAP capability. Phase II is an integrated on-line central data bank with a single input system using the tenets of source data automation. The system is expected to service all components of the AFSC.

e. Customer Integrated Automated Procurement System

CIAPS was designed to provide timely support to various organizations supported by an Air Force Base procurement office. The system accepts purchase requests and provides delivery orders and solicitations in an automated mode. It also assumes record keeping responsibilities in many areas and provides the base procurement managers with various management tools. A series of management reports are produced by the computer, one of which is a procurement history which includes pricing data and vendor performance. CIAPS contains a base level inquiry system, which provides procurement personnel the ability to retrieve data from the many files contained in the system. The computer prints DD 1155 solicitations or delivery orders against existing blanket purchase agreements. It will also print Standard Form 33 requests for proposal. CIAPS includes an automated source list which can be adjusted to provide from as few sources as desired up to the total available in the system for a given item. The system can be set to rotate vendors as desired. CIAPS was designed to be implemented on the Burroughs B-3500 computer system.

5. Department of Defense

Since most of the systems described include some reference to their relationship to MILSCAP, it seems appropriate to describe that system briefly. MILSCAP is covered and prescribed in detail in DOD Manual 4105.63M, published in 1966. The manual sets forth standard procedures for use in exchanging procurement and contract administration data between purchasing offices and contract administration offices. The system was designed with the concept of transmitting a high volume of transactions in machine processable form through the AUTODIN network. Such an approach was envisioned to speed up the flow of required data for purchasing offices, contract administration offices, inventory control points, and finance and accounting offices.

6. General Services Administration

The General Services Administration (GSA) through its Federal Supply Service (FSS) had several automated systems worthy of note. It was the Automated Delivery Order (ADO) system which attracted attention due to its implicit application on a regional scale. ADO is an adjunct to a total depot inventory management system known as 65A2. ADO prepares stock replenishment delivery orders and nonstock direct deliveries against established sources. The procedure was intended to reduce the time span between creation of a stock replenishment demand and distribution of the delivery order to the supplier. ADO is completely integrated with the 65A2 depot inventory management system and interfaces with a procurement status system (2790-2). There were however, no more than 400 items currently loaded into ADO files.

B. CRITIQUE OF EXISTING APPLICATIONS

While delving into a plethora of automated systems considered during research, and narrowing the scope to include only those which on the surface indicated some

relationship to procurement or a regional information sharing application, the tendency remained to become overwhelmed by the sheer immensity of thought, effort, attention to detail, and the ever present glamour of automation. It became necessary to be constantly reminded that the objective of this thesis had to be well defined, and after definition, to resist wandering away from it. Task Group 3-73 of the LSPC unknowingly kept the effort on track by presenting a critique of the automated systems observed in their study. It must be remembered that the Task Group's objective was to explore automation in procurement, but a capsulized version of their critique is presented here with particular emphasis on those systems lending themselves to a regional construct. There follows a critique by the authors, structured in similar fashion to the Task Group, but reflecting some of the specific ideas and observations formed as a result of this study effort.

1. Task Group 3-73 Systems Critique

MILSCAP was the subject of extensive and most detailed analysis in the Task Group 3-73 critique. The treatment was in some instances highly critical. MILSCAP was briefly described as a telecommunications system designed for transmitting selected data elements, via AUTODIN, between procurement contracting officers (PCO) and administrative contracting officers (ACO) without actually helping either to perform their jobs. It was contended that the PCO is required to feed MILSCAP data into the system and he thus views it as a chore from which he receives no direct benefit. His counterpart, the ACO, receives system output which contains insufficient data to enable him to begin administering a contract. This argument is belabored further by pointing out that while MILSCAP may some day make it possible to reduce some flow of hard copy documents from ACO to PCO, it does nothing to ensure timeliness of that flow. The culprit there was not MILSCAP itself, but the fact that it relies on AUTODIN to accomplish the

transmission of data. The fact that logistics has the lowest priority for use of AUTODIN (it was designed for tactical use), causes frequent queuing situations for MILSCAP transmissions. There is no question that procurement needs ready access to a telecommunication system for the rapid exchange of information between the PCO and ACO, and between the procurement organization and its customers. However, that system should also operate as a by-product of the procurement process. In the utmost it should operate in real time and be dedicated to the procurement function. MILSCAP in conjunction with AUTODIN cannot satisfy these needs. The most damning criticism was stated in terms that MILSCAP does not work for procurement people, procurement people work for the system and get very little in return.

The Army's Commodity Command Standard System (CCSS) is portrayed as a highly integrated and sophisticated system in all respects, except for the procurement process. Since the computer-generated purchase requests are reduced to single line item documents, the number of documents tends to increase, thus slowing response time to users. The major criticism from the point of view of this thesis is the fact that CCSS could only be run twice per week.

SPEDEX produces a computer printed purchase request and features real time inquiry capability by remote terminals. But the benefit to procurement offices is generally limited to management reports. Other departments of the depot seem to benefit most from this depot-oriented system.

The Navy's UICP system with associated subsystems was designed to produce mechanized purchase documentation in response to item requirements. Some criticism of UICP was levied due to the fact that a low proportion of PR's were being generated by the system. Of particular note were high priority items which are handled manually since they could not wait for the next automated cycle. That is, the need

for speed of processing dictated use of the manual mode.

The Procurement Accounting and Reporting System (PARS) of the Navy was scheduled for implementation in 1974. The most noteworthy observation was that the system was designed exclusively for the procurement appropriations. A full range of management reports of the procurement appropriations results.

The Air Force Acquisition Support and Interim MILSCAP System (J041) represents an example where the entire acquisition function of management and administration is automated. Procurement personnel indicated to Task Group 3-73 that excess manpower was required to maintain input to the system while the output was of questionable value. Further, the system was run no more than twice per week resulting in reports containing information up to two weeks old.

Task Group 3-73 found that CIAPS was the victim of a misleading name. It is not an integrated system but stands alone among Air Force automated systems. CIAPS was the target of singular criticism for the method of processing low dollar value procurements (under \$250). The system prints out multiple solicitation forms for each buy (other than delivery orders), including three pre-addressed DD Forms 1155 (different vendors) plus one unaddressed. Thus the system experienced the inherent delay of mailing solicitations, awaiting bids, and selecting low bidder, even though ASPR provides that for buys under \$250, only one source need be contacted by telephone.

The DSA Standard Automated Material Management System (SAMMS) features an automated small purchase system. Recommended buy requirements are screened against files and a BPA or indefinite delivery call is mechanically generated. Simultaneous to the mechanical call preparation, a shipment instruction sheet is generated with numerous copies. Included with each shipment instruction sheet is a vendor response card requiring a minimum of information to be

annotated by the vendor. At the time the Task Group visited a SAMMS installation, the rate of success of this function for producing orders up to \$250 exceeded 70 percent. It was considered to unquestionably be the most successful of the automated efforts reviewed.

2. Author's Review

Whereas the foregoing resume of Task Group 3-73's critique emphasized the benefits and detriments of the various systems to automation in procurement, the effort on this thesis was recognized to be needing of a critical review of those same systems with respect to regional procurement and more importantly, to the concept of information sharing.

The only general statement that can be conclusively made about the systems presented is that they all seemed to be increasingly sophisticated with resultant complexity of concept as more advanced hardware became available in the computer industry. The efforts to produce a system capable of communicating with another system with similar or related objectives were usually described as integration of design or, in several cases, MILSCAP compatible. The problems in designing, programming and implementing an "integrated" system are immense and rather obvious. Chapter VI will present the basic tenets of system design that the authors have determined to be minimum considerations. With this framework in mind, a critique of the systems reviewed follows with a somewhat varied flavor.

The Army's Commodity Command Standard System (CCSS) and the Navy's Uniform Automated Data Processing System for Inventory Control Points (UICP) serve the same basic function and maintain similar relationships with the related inventory control and financial management systems. There seems to be a trade-off between the needs of the inventory manager and the needs of the procurement buyer while using the same systems designers and probably the same hardware. The procurement subsets of both systems suffer from a batch

processing procedure run once or twice per week while the inventory control function receives real-time response.

The Safeguard Management Information System (SMIS) deserves particular note since it was designed and implemented with apparently intentional disregard of other Army systems. The fact that Task Group 3-73 evaluated it as the best system reviewed is interesting, both because it represents the epitome of monolithic structure and it was designed and programmed by contractor personnel.

The Air Force Customer Integrated Automated Procurement System (CIAPS) was studied in detail and was highlighted by a visit to an operational site at Mather Air Force Base. From the point of view of this thesis, the system as was then operating was rather disappointing. A series of some 56 bases had implemented CIAPS but each was a "stand alone" system, never communicating with other bases or sharing procurement information. Lest such criticism be considered too harsh, it is also recognized that CIAPS is expected to become the first system to embody the sharing concept for procurement information. What is now a batch mode, monolithic system is designed to be shifted to a real time integrated system tying bases together over a wide geographical area. Such a prospect is considered both ambitious and exciting. Insightful procurement managers at Mather could see the future benefit from CIAPS when the various bases become interconnected and form a common data base. But benefits from the current system to both procurement personnel and customers were not easily verbalized.

DSA's mechanized contract administration system (MOCAS 1B) was immediately interesting, not because of any relation to procurement, but because its purpose was to share information by rapid means in automated form. The fact that it is operational confirms the notion that a regional application of information sharing is possible.

UTURE INITIATIVES AND IMPLICATIONS

In addition to compiling and examining a goodly number of existing and proposed systems for automation in procurement, an equally significant area for study was the future initiatives and plans for systems still in the idea stage. Any hopes for building a regional model, whether for a specific region or as a general model, must not be blind to the most forward-looking thoughts available. All the information gleaned on this topic came by means of interviews with views both in Washington, D. C., and various system managers in the San Francisco Bay area. As a general statement, whenever the two words "regional" and "procurement" were adjoined in an introductory conversation, the respondent quickly agreed that there are significant benefits to be gained by expanding that concept but in no case could it be shown that existing or planned systems considered the benefits of sharing procurement information on a regional basis. It must be surmised that planned systems relate more to the mission of the system itself rather than to the mission of a particular area. There was in fact no evidence revealed during the preparation of this report to indicate any change in the orientation of either procurement system planners or general automation planners. A statement might raise arguments from planners from either school of endeavor, but more depth of analysis will be presented in Chapter VI. Perhaps it is opportune to present an example here.

As described previously in this chapter, the DSA's SAMMS system was evaluated as one of the most successfully implemented systems and featured an automated small purchase system. In the same subparagraph there is a brief description of the DSA's automated contract administration system which operates effectively on a regional scale. An interview with the Director of Systems Support, DSA, revealed that consideration had not been given to marrying

the concepts of procurement and regional information sharing. This provides but the most shining example of the fact that this thesis did not deal with new ideas, but rather gathered several old ideas, the confluence of which proved to be virgin territory.

A final topic considered most pertinent to the concept under study is the newly formed Office of Federal Procurement Policy (OFPP). Considerable study and analysis of the Report of the Commission on Government Procurement was carried out in an effort to determine what future federal policies, if any, might apply to a regional construct. It must be reported that definitive answers to that issue were not forthcoming. The OFPP was still in infancy and the impact of any future pronouncements or initiatives remained a very large unknown.

D. CONCLUSION

The net result of the efforts in procurement automation to date have provided but a tenuous thread upon which to draw conclusions concerning existing information sharing capability. Conscious effort toward sharing information in the sense prescribed by this thesis was not apparent. Such a lengthy overview was not in vain however. It is patently obvious that Task Group 3-73 addressed the systems aspect of automation in procurement in considerable depth. From descriptions presented, the critique by Task Group 3-73, and the author's separate review, several observations or conclusions can be drawn.

First, existing systems generally address procurement as just one function in a total automation package. There seems to be an implicit goal to integrate all functions which might lend themselves to automation with only token regard to the purpose or mission of the individual functions themselves. Such a pitfall is where the concept and capability for sharing information dissipates.

Second, the capability to share information was found to exist. Techniques for rapid transmission of information were found in several systems such as MOCAS, requiring only the concept of sharing to be introduced. Chapter VI presents a model of such an effort.

Third, there is a considerable volume of data already developed in support of existing systems. Any approach to developing a regional information sharing concept should consider these data files as a source of information.

VI. A MODEL OF INFORMATION SHARING

The enthusiasm generated at the inception of this thesis waxed with visions of a model ready to implement, which would gain immediate and wide acceptance, and reap universal fame and fortune for its authors. Such expectations were forthrightly and steadfastly exuviated. There were occasions when "back to the drawing board" seemed the order of the day. But perseverance was rewarded when it was decided that a viable model in and of itself was not forthcoming, but rather that a "back to the basics" approach was needed to identify the essentials to be met in constructing a model. This chapter describes not only the problems encountered in building a model based on the conclusions drawn from both automation in procurement and the theories of the region, but also enumerates those ideas and concepts, perhaps even requirements, which must be considered within the framework of any military or government logistics planning.

A. INFORMATION REQUIREMENTS

The government procurement process, whether carried out by the military in accordance with ASPR, by other federal agencies in accordance with FPR, or by state and local governments in accordance with applicable laws and regulations, involves the accumulation, manipulation, storage and reporting of large volumes of information. The form and detail of a large percentage of such information is prescribed by existing regulations, while other information is gathered to enhance the quality and efficiency of the procurement process and is generally dictated by good management practices.

The general premise at the outset of research for this thesis was that price history, or information regarding previous purchases, is of value and can be of use to future

buyers of like commodities. There were several scenarios envisioned. First, a small purchasing organization using entirely manual processes would experience demand for an item requiring purchase in the open market. The presumption was that the search for a source of the item and the appropriate and fair price would be enhanced if information regarding previous purchases for identical or similar items purchased in the same geographical area were available. The second scenario involved a rather large purchasing organization making use of computers to assist the buying process. A similar concept whereby historical purchase information concerning sources of supply, recent prices, and item availability was likewise presumed to be of benefit. Third, by some means of communication, the mechanized history files of a large procurement organization might be made available to other purchasing offices within a geographical region. The receiving offices would contribute purchase history to such files, thus constructing a regional procurement history data base.

Any thought or hope for bringing one of these scenarios to fruition raised some vital questions. Specifically, what kind of information would be valuable and could it be shared? Does procurement information have the same meaning to all potential users? How is such information to be shared and in what form will it be? What are the costs or implicit trade-offs in such a scheme? The remainder of this chapter describes the efforts, findings and conclusions with regard to these concepts, attempts to build a framework for answering these questions, and reflects the considered results of the research for this thesis.

1. Procurement History

Throughout the discussion and description of the model, consideration will initially reflect only the simplest of circumstances. Only if the specific precepts of information sharing are acceptable to a basic, manual, personalized procurement process, will further effort with

more sophisticated systems be warranted. More succinctly, sophistication of a poor system cannot improve it, only make it more complicated.

In order to elicit the contextual framework for this elemental portion of the model, it is useful to envision a single buyer in a procurement office having just received a procurement request. Disregarding any procedural regulations, the determination of precisely what information this particular buyer needs is of essence to the model.

a. Item Description

The requisitioner must have adequately communicated the description of the item or service needed to the buyer. The buyer in turn must describe the same item to the vendor in order that the requisitioner's need will eventually be satisfied. That is, all links in the chain from initial requisition to delivery of the item or service must understand and agree upon the description of the item. Thus an implicit task of our buyer is to test that the item description in the requisition is neither ambiguous nor open to differences of interpretation or understanding. If this is not the initial action of the buyer, it should be among the first few.

The assignment of a Federal Stock Number (FSN) to the item would prove a boon to our buyer's item description problem. Assigning an FSN implicitly relegates the item to one of known description, dimensions and quality throughout the federal government and for which specifications are available. Any numbering system hopefully obviates the danger of noun description of items and the varying interpretations and understanding of such nouns and their adjectives. But it can easily be surmised that the more likely requisition reaching our buyer's desk is for an item for which no FSN has been assigned. In such a case, a real need has been identified. To satisfy the requisition and perform the procurement function, the buyer needs a responsive method of item description.

b. Vendor

Given that a satisfactory method of item description is available, another element of the procurement process is evidenced. The buyer must find a vendor who is responsible, understands the item description, and is capable of satisfying the customer. Our buyer must have a method of identifying such vendors. The most obvious method is to refer to vendors by company name and such a system is invariably used wherever the number of vendors dealt with is small. One can then envision a file of vendors, by vendor name, which lists the items or products of each vendor using the same item identification scheme. This file becomes the fundamental feature of procurement history. In our oversimplified model thus far, the buyer is capable of identifying the requested item and matching that item to one or more vendors potentially capable of supplying the item. The remaining elements of procurement history build upon this simplistic file.

c. Price

Although one of the simplest elements of the procurement process to express, price is axiomatically one of the most important to both requisitioner and vendor. The buyer is concerned not only because price may determine the procurement method to be used, but also the quality of the buy is determined by the customer's demand being satisfied at a fair and reasonable price. Price is consistently expressed in dollars and as such, the utmost in standardization already exists. There are several methods of storing price information in our primitive file. Vendors may have published list prices for items so that price data are displayed in catalog fashion. Prices can also be recorded as historical data, that is, prices which have actually been paid for such items in the past. No preference for either concept is cast here; perhaps both types of price data should be useful.

d. Document Identification

Reference to previous procurements implies the need for an additional means i.e., cross reference. Recognizing that every procurement contract must be filed systematically for potential future reference, a system of document numbers seems the most logical method to satisfy such a need. By single reference to a document number in the history file, the buyer has available the complete detail of previous purchases from the systematic file of contracts.

The essentials of procurement history have thus been described. It can be argued that additional information such as a performance index to differentiate the performance of various vendors is essential. But it is with the foregoing elements of procurement information which have been loosely referred to as procurement history, that the concept of sharing on a regional basis holds promise.

2. Information Sharing

While remaining consistent with the "simplest case" procurement system referred to above, a network of information sharing seems simple, logical, and quite unobtrusive. The first extension of the concept is from one buyer in one office to two buyers in separate offices, but within the same geographic region. The simplest case of sharing would probably be by voice communication or some equally simple medium. Whenever the first buyer received a procurement request, he could access both his own procurement history file and the file of his counterpart in the second office. The additional information might very well contribute to the quality of the final buy. Further extension of the model is obvious to many buyers and many offices, to the point where the limiting factor in sharing becomes not the differences in systems, but the speed and capacity of communications systems. Modern technology brings visions of interactive computer terminals and real time random access storage devices. But the critical point

to be offered here is that the wealth of technology available today is useless without the conscious structuring of the "simplest case" procurement actions and activities. Future systems designers must look through the maze of technology to recognize that data elements such as item description, vendor, price and document identification must be common to all procurement participants.

B. APPLICATION OF INFORMATION SHARING

Extension of the "simplest case" model described above is necessary to apply information sharing to a real-life situation. The sharing and use of what has been described as procurement history by buyers processing purchase requests is straightforward and rather simplistic albeit essential. The process of contract negotiation and award reflects more complex functions performed by buyers but basic information needs are similar. Such negotiators, presumably dealing with contracts of higher dollar value and increasing complexity, might well benefit to an even greater degree from an application of information sharing on a regional scale. The quality of a contract can only be enhanced by the availability to the negotiator of recent information such as price for similar items sold to the government in the region, existence of vendors not previously solicited, elements of cost data, or even information that other procurement offices frequently buy the same item. The latter case lends itself to participation in open-end or indefinite quantity type contracts within a region. In award determination the availability of pre-award survey data from a central data source would enhance the contracting officer's responsibility decision.

Continuing a further step toward the "actual" versus the "simplest case" application, it is recognized that the simplest medium of communication of procurement information may not be the most desirable or efficient. Voice

communication between buyers is painfully slow and even detracts from the efficient allocation of a buyer's time. Presupposing that in most substantial purchasing organizations there is clerical effort to research and collect the procurement data package, such clerical personnel are the logical operators of a regional information sharing system. The communications medium could very likely employ data communications devices in the same fashion as some of the systems described in Chapter V. This scenario could easily envision remote terminals for display of real-time information or at least the latest information from a sequential-type system. Cathode ray tube devices enable rapid search for data elements such as item description and vendor. Even hard copy devices hold promise, especially as the advances in mini-computers enable some manipulation and processing of data after collection.

It requires little more imagination to investigate the inclusion of existing data bases to contribute to our regional information sharing model. A significant portion of the research in compiling Chapter V consisted of evaluating the various systems as potential sources of such information. Ready candidates include DCAS-type information as evidenced by the MOCAS system and the purchase and contract administration subsystem of the Navy's UICP system. But there is an even further need to explore the possibility of developing new data bases for regional use. There must be a clear recognition that such a regional network of information need not be integrated with the functional missions of the various participants, but rather it would contribute significantly if the information were readily communicable, and available in modularized form. As advancements in technology permit increased ease of communication, participants in the information sharing region will tend to increase and the region boundaries may even grow.

C. THE CHALLENGE OF INFORMATION SHARING

In no area have the ideas and concepts developed in this thesis been more exciting or rewarding to the authors than with respect to sharing. It is only if such excitement or enthusiasm can be demonstrated, communicated or justified that the effort can be minimally termed successful. The remainder of this chapter expresses the tenets of this concept, developed consciously but independently, in words which hopefully reflect valid and documented conclusions. This is considered to be the most original work on the project and as such tends to facilitate a sense of pride of authorship.

1. Information Versus Control

This concept of sharing was most vividly expressed early in the research phase of preparation for this thesis. One phrase holds the basis of the concept thought to be the key to success of regional procurement: Share information, not control. There are several implicit truths and judgements in such a statement. First, it is frequently surmised that within organizations, information is a source of control. That is, those who have information and are capable of selectively releasing or withholding it, exercise a powerful sense of control. Consequently, those seeking such power might tend to garner information for use as a mechanism of control. The second implicit judgement in the basic concept is that sharing of control ought to be avoided. Perhaps the two terms sharing and control are themselves antithetic. Within the government service and certainly within the military, the idea of control is fundamental. Command and control bring forth immediate connotations of rigid and unswerving discipline required in wartime or battlefield conditions. Certainly such control is not to be shared. But control also reeks of political connotations. What will be described here as "command prerogative" is held near and dear to the hearts of military

commanders as well as elected officials, corporate executives, and others with such positions of authority. Without control, such leaders are next to helpless to carry out whatever mission or objective has been established. The inherent quality of control in this sense is that if it is shared, it no longer exists. Herein lies the distinction which is vital to the expression of this thesis, information is not necessarily control. Information can and must be shared and it must be carried out without the slightest threat to the control of the commander or manager of the involved organizations. Before accepting or agreeing to any scheme whereby procurement information is shared on a regional scale, top management must be convinced that their command prerogatives will never be jeopardized.

2. Uniform Distribution of Benefit

Before a regional construct of procurement information is implemented, not only must any threat to command prerogative be laid aside, but the benefits or payoff to all participants must be clearly in evidence. Short of an edict or fiat from on high, commanders would inevitably balk at participation in such a plan unless the marginal benefit derived were not at least equal to the marginal cost of such participation. More succinctly, the idea will have to be sold.

In all likelihood, some potential participants within any geographical region will already be benefiting from sophisticated and computerized information systems. Conversely, some others will have been rather successfully performing the procurement process with simple but effective, manual data bases. It is axiomatic that the users of a computer-based, rather sophisticated system would be willing to share their system with others less fortunate, but they would tend to be unwilling to modify or even simplify their system to accomodate such "have-not" organizations. Thus the definition of a model for the sharing of procurement information must consider this

variability of benefit between disparate participants.

It is concluded here that not only must an information sharing system be standardized, communicable, and clearly beneficial, it also must be simple enough and universal enough to be applicable to any procurement organization, no matter how sophisticated.

3. System Isolation

A measure of significance has been attached to the seemingly universal monolithic nature of the systems studied. Interviews in the San Francisco Bay area tended to confirm that not only do highly sophisticated systems operate in close proximity without common recognition, but that informal organizations or communication between operators of such systems are virtually nonexistent. The challenge of this concept is to build a bridge between the users of procurement information, the buyers, and the obviously untapped sources of that information, the automated systems. Implementation must cut across monolithic structures to identify ready information and enable access to all buyers within a common region.

D. IMPLICATIONS OF THE MODEL

Although quite general in nature and not reflective of any particular region, the perspective of a model of information sharing is enhanced by examining its implications on a specific region. The San Francisco Bay area once again qualifies for this assignment.

1. Standardization

Throughout all of the activities contacted in the San Francisco Bay area, the incidence of comparable or even compatible data element schemes was lacking. Item description was the highest hurdle. The Federal Stock Number system meets the criteria of universality and could even be considered simple. But for items not so numbered, categorization schemes abound from activity to activity. Before any regional model is implemented, designers must

first tackle the item identification problem. The regional construct must be uniform in this respect and the categorization must lend itself to both manual and automated application.

Price and document identification information lend themselves with much more facility to standardization. Each can be expressed in numbers. Only the format of expression need be specified. Vendor identification requires somewhat more imagination, but likewise can be reduced to numbers readily.

2. Data Compatability

The scale of government logistics operations, mind-boggling to some, is so large to preclude a semblance of economy due to integration of systems. But as is obvious from the information sharing scheme proposed here, the data in use in the various systems must be compatible in order to be shared. One of the most striking lessons learned from the search through systems descriptions was that integration of logistics systems is a dream. Perhaps interface might be a better goal than integrate. But by interface is meant to be capable of using common data even though the processing of such data may be foreign. It is proposed that regional procurement information sharing be structured such that various procurement systems within a region be capable of interfacing procurement information.

3. Expansion of Market Sphere

The idea of a regional pool of procurement information reveals implications beyond purely government or military affairs. cursory examination of Bidders Mailing Lists at large activities such as NSC Oakland reveal potential sources of supply nationwide. Smaller activities with only limited purchase needs tend to deal with local suppliers. The availability of source information, including item history of other activities in a region, will expand the market of every participant in the system. Here is prima facie evidence of enhancement of competition and

the free market system. In a sense, the market influence of the largest military procurement organization in a region is transferred to the smallest buyer. Likewise, by contributing to the data base, even the small organization adds to the range of procurement history available to large buyers. In such a case, the whole is clearly greater than the sum of the parts.

VII. CONCLUSIONS AND RECOMMENDATIONS

Clearly the foregoing model will require detailing and amplification. It will, however, serve as a starting point from which a full range of actions can be developed. More importantly, it will provide the basic guidelines for reforming and improving the field procurement process while nurturing a climate of promise toward meeting the needs of tomorrow.

The conclusions presented herein resulted from an idea and a search. The idea was that more effective accomplishment of field procurement could be achieved through sharing of information. The search was to find and overcome the obstacles in the path of such an idea. The recommendations are elucidative not only of what were considered logical extensions of the study, but also reflect unfulfilled avenues of search in this thesis. As with all such efforts, more generous applications of time and material resources are constantly sought.

A. CONCLUSIONS

The conclusions generated by this research are enumerated below. They are organized to initially focus on the feasibility of information sharing as a concept, followed by an expression of the benefits expected to accrue in a practical sense, and finally some of the obstacles which are seen in the pathway to application of the model.

1. Feasibility

At least in the Navy, the concept of area and station buying is recognized as an integral part of the field purchase system. The bulk of Navy field procurement is conducted on a decentralized basis. In addition, since the Navy has already recognized the area buying concept, as evidenced by the Navy Regional Procurement Offices, initial application of regional information sharing would logically

expand upon the Navy concept.

Theory and practice seem to support a concept that significant economic activity takes place on a regional basis. Chapter IV concluded that the San Francisco Bay area in fact conforms to such a theoretical construct while further enjoying a plethora of military activities. It is syllogistic that initial efforts, albeit a test of these concepts, be directed toward the San Francisco Bay area in general and U. S. Navy activities in particular. Feedback and evaluation of such efforts should permit a decision for expansion to additional military services or even all federal government activities.

As a concept, regional information sharing is initially appealing and somewhat exciting. The potential of the concept appears healthy but the rewards to be gained must be offset against the hurdles which stand in the way. If modules of information can be identified and built into a sharing system, improvement of procurement will result. It is such a modular sharing of information which seems most feasible; integration of systems seems extrinsic. The identification of potential information sources should not be blind to or restrict consideration to existing automated systems. There are undoubtedly productive modules of information presently collected but in a strictly manual mode. Witness the bidders mailing list system at NSC Oakland described in Chapter II. In short, the feasibility of information sharing extends beyond currently operational automated systems.

2. Benefits

As evidenced by Chapter V, the technology of automation and communications is at hand or close at hand to enable the sharing of information on a regional basis. The inherent payoff and appeal of information sharing moves closer to realization with each such advance in technology. By taking the simplest case of information requirements for procurement and expanding to include standardization,

communicability, and data compatability, advances in technology will complement the concept rather than drive it to extinction.

An implicit benefit of information sharing only alluded to in the scenario of Chapter VI is that the efficiency of the individual buyers should be materially improved. When a procurement is initiated, the buyer can immediately broaden his scope to encompass the entire range of procurement information in his region. Where buyers previously relied on individual experience and expertise with certain groups of commodities, information sharing should compound the experience and expertise of all buyers in a region.

3. Obstacles

Approaches to automation to date and in particular, automation in procurement, have clearly been more systems oriented than region oriented. The wealth of systems discussed in Chapter V demonstrates this argument by pointing out the monolithic attitude of almost all such systems. To overcome this, systems planners should establish a priority in the area of regional automation which considers the concept of information sharing. The scenario depicted in Chapter VI must be considered if any of the benefits exposed here will ever accrue. Recognizing that technology is advancing rapidly, it must be made clear that the sharing of common data is essential to take advantage of such technology.

The process by which regional procurement through sharing of procurement information takes place will be long and slow. Basic to this approach is a mutual accomodation of convenience, recognized by the procurement community within a region and faithfully implemented by the field level functional manager. Recognition of such compatability must evolve with a certain sense of naturalness, it cannot be the result of coercion or parochial interests might perceive a threat to the status quo and sharing will

probably be frustrated.

Closely allied to a misperception of a threat to the status quo is the manner in which the organization head perceives sharing of information. The obvious reasons for development and maintenance of monolithic support systems are the differences in missions and goals. The head of an organization will dismiss discussion of resource sharing on a regional basis if such sharing is recognized as a diminuation of prerogatives of command. Therefore, even though actual sharing of information may grow into a form of control, it is not the objective of the concept and great care must be exercised to keep sharing of information separated from control of information.

The practitioners of federal procurement must learn to communicate within the professional community. Observations during this study indicate that field level functional managers are very close to common understandings of procurement data elements. Whereas Task Group 3-73 found commonality in only 26 of 1700 data elements which appeared in the procurement systems which it examined, procurement managers around the San Francisco Bay area expressed common ideas and requirements in precisely the same language. It is only when viewed from the top down that communication appears so disparate. The lingo in use by those on the job within a region is close enough to commonness that only a stabilizing element need be introduced such as the sharing scheme presented in this thesis.

B. RECOMMENDATIONS FOR FURTHER STUDY

The emphasis in this part is directed toward continuing the development of the concept of information sharing on a regional basis. As concluded above, the next logical step should be taken toward more definitive application of information sharing by Navy activities in the San Francisco Bay area. Such an extension would hopefully develop into a full-scale test of the concept and feature means and

techniques of analysis and appraisal. If such a test meets the criteria of becoming successful, further extension to include all DOD activities in the area is certainly warranted. Should the economies and efficiency which are predicted here continue in evidence, a third step to include all federal procurement functions would clearly follow. At this same time, consideration must be given to expanding to a second test region for further validation.

This general framework for continuation of the information sharing concept must identify some specific tasks which the authors feel are necessary and desirable. Future researchers should obtain and analyze a sample of Bidders Mailing Lists from procurement activities in the San Francisco Bay area. The task is to statistically determine the economic influence of various activities in order to estimate the effect should information sharing concepts be implemented. There should be a survey conducted of the manual, semi-automated or automated data banks which aid the buyers and negotiators in the regions. Vendor source lists and item price history files are examples which come immediately to mind. There should additionally be a cost analysis of the present method of procurement in the region in terms of personnel, equipment and space.

The foregoing recommendations lend themselves, in total, to the development of a model of the San Francisco Bay area in mathematical terms using known techniques of quantitative analysis. This thesis presents a concept and opens up a fresh area of potential improvement to the government procurement process. A statistical model upon which major policy decisions can be made is certainly the next order of business.

Such a recommendation would be incomplete without identifying the disciplines and skills necessary to carry forth with the effort, recommending who should perform such continuation of research, and reflecting on where such skills and research expertise are located.

Skill and experience in government procurement is obviously required for continued research. But equally valuable will be those with experience in data processing and automation of logistics systems. A skill which could perhaps contribute in great measure to the effort would be that of operations research. This is not to say that the traditional practitioners of these three major areas of expertise should transfer knowledge and mesh disciplines naturally. But it is maintained here that these general areas of thought can make valuable contributions to the continuation of the concept.

With regard to locating the most obvious candidate to pursue information sharing, the pathway is somewhat dim. The Naval Postgraduate School can certainly contribute to such an effort but detailed management and the intensity of concentration required to implement such a concept would restrict the school to a supportive rather than a directive role. A dedicated team capable of responding to a day-to-day schedule and committed to a time frame would be most desirable. Consideration could even be given to contracting with private enterprise should policy decisions favorable to the concept be forthcoming. Likewise, consideration must include in-house government capability in the services, the DOD, and the other federal agencies.

C. IMPLICATIONS REVISITED

A discourse such as this thesis would be incomplete without some reflection on the perspective. It has proven to in fact be a futuristic view of procurement and the model has been expressed in as general terms as possible. When the topic for research began to take form several months ago, the first order of business seemed to be a search for existing research in similar or related areas. While not knowing what sort of results to expect, the authors were dumbfounded to learn of the paucity of research in this area of procurement. It is an uncomfortable feeling to find that

these humble and meager efforts might be the sole and leading research of the time. Looking back upon the report to the Commission on Government Procurement which called for further study into the multiplicity and duplication in government procurement, this thesis stands as a response to that call.

APPENDIX A

DEPARTMENT OF DEFENSE PROCUREMENT ACTIVITIES IN THE SAN FRANCISCO BAY AREA

Source: ASPR, Appendix N, Rev 12, 29 April 1973

Defense Supply Agency Activities

DSA137	Subsistence Regional Headquarters DPSC, Alameda
DSA8FS	DCASO FMC, San Jose
DSA8PW	DCASO Philco Development Lab, Palo Alto
DSA8SC	DCASD Oakland, Treasure Island
DSA8SF	DCASR San Francisco, Burlingame
DSA8SM	DCASO Sylvania, Mountain View
DSA8WS	DCASO Westinghouse Electric Corp., Sunnyvale

U. S. Army Activities

DACA06	Army Engineer Division, San Francisco
DACA07	Army Engineer District, San Francisco
DADA01	LeHerman Hospital, Presidio of San Francisco
DAH23	Western Area MTMC, Oakland

U. S. Navy Activities

N00221	Mare Island Naval Shipyard, Vallejo
N00228	Naval Supply Center, Oakland
N00236	Naval Air Station, Alameda
N00296	Naval Air Station, Moffett Field
N00619	Naval Hospital, Oakland
N60028	Naval Station, Treasure Island, San Francisco

N60036	Naval Weapons Station, Concord
N60895	Navy Commissary Store, NAS Alameda
N62383	Military Sealift Command Pacific, Oakland
N62471	Western Division, NAVFAC, San Bruno
N62768	Navy Public Works Center, Treasure Island
N62798	Supervisor of Shipbuilding, San Francisco
N62921	Naval Plant Representative, Lockheed, Sunnyvale
N62922	ROICC Pacific, San Bruno

U. S. Marine Corps Activities

M62115	Marine Corps Training Center, San Francisco
M62128	Marine Corps Reserve Training Center, San Jose
M67019	12th Marine District, San Francisco
M67030	Marine Barracks, Mare Island, Vallejo
M67031	Marine Barracks, Treasure Island, San Francisco
M67251	Marine Barracks, NAS Alameda
M67273	Marine Barracks, NWS, Concord

U. S. Air Force Activities

F04602	Hamilton Air Force Base
F04691	Air Force Plant Rep, Lockheed, Sunnyvale
F04698	Air Force Plant Rep, United Technology

Other Government Agencies

ACTION Western Region, San Francisco
 Agriculture Department, Alameda
 Atomic Energy Commission, Oakland
 General Services Administration, San Francisco
 Customs Department, San Francisco
 Food and Drug Administration, San Francisco
 Government Printing Office, San Francisco

National Aeronautics and Space Administration
U. S. Postal Service, San Francisco
Department of State, San Francisco

APPENDIX B

INTERVIEWS

Note: Affiliations of interviewees indicated at time of interview

ALEVA LCDR D., SC, USN, Special Assistant to Director, Regional Procurement Department, NSC, Oakland, Ca.

ANASTASI LT R., SC, USN, Assistant to the Director Regional Procurement Department, NSC Oakland Ca.

BAKER CDR J., SC, USN, Director SAMMS System Support DSAH Cameron Station, Va.

BADGER CAPT G., SC, USN, Director, Regional Procurement Department, NSC Oakland, Ca.

BERNSTEIN Mr. G., Analysts Research and Development Branch, NAVSUPSYSCOM, Washington, D.C.

BLANCHARD COL D., USMC, DOD LSPC Secretariat, Washington, D.C.

BOWERS Mr. J., Chief, Procurement Division, U.S. Army Presidio, San Francisco, Ca.

BRADLEY Ms. O., Chief, Administrative Supplies and Equipment Branch, GSA, San Francisco, Ca.

BRENNAN LCDR T., SC, USN, Deputy Director, Regional Procurement Department, NSC Oakland, Ca.

BUNCH S/SGT R. CIAPS Systems Specialists, Randolph Field, Tx.

CALAFATO Mr. T., Chairman, Task Group 3-73, DOD LSPC, Washington, D.C.

CASSELBERRY LTCOL J., USAF, P & P Directorate, Randolph Field, Tx.

CHENNEL Mr. R., Director, Procurement Systems Division, Air Force Design Center, Gunter AFB, Al.

CORBETT Mr. T., Consultant, Systems Design, St. Louis, Mo.

FERNANCE Mr. D., Director, Material Support Division, GSA, San Francisco, Ca.

FINNEGAN Mr. W., Chief Counsel, Regional Procurement Department, NSC, Oakland, Ca.

FOGEL Mr. D., Chief Policy Branch, P & P Directorate, DSAH, Cameron Station, Va.

HUGHES Mr. T., Public Information Officer, AEC, Washington, D.C.

ISRAELIAN Mr. R., Director, Field Management Division, NRPO, Washington, D.C.

KENIN LCDR D., SC, USN, Director, Procurement Division,
NRPO, Long Beach, Ca.

KERTISS Ms. C., Procurement Systems Analyst, Code 02,
NAVSUPSYSCOM, Washington, D.C.

KLINBLE Mr. P., Defense Documentation Center, Cameron
Station, Va.

HAMMER SGT D., USAF, CIAPS Systems Specialist, Mather AFB,
Ca.

HILL S/SGT J., USAF, CIAPS Systems Specialist, Randolph
Field, Tx.

LYNCH LCDR T., SC, USN, Naval Audit Service, Washington,
D.C.

MANGANELLO Mr. J., UICP, FMSO, NAVSUPCOM, Mechanicsburg, Pa.

MAPA Mr. R., Systems Analyst, Stores Control Division, GSA,
San Francisco, Ca.

MASTREANDREA LCDR G., SC, USN, Director, Procurement
Operations Division, Code 02, NAVSUPSYSCOM, Washington, D.
C.

MCCORMACK Mr. J., Procurement Analyst, U.S. Army Proving
Grounds, Aberdeen, Md.

MIZDAIL Ms. S., Director Contract Administration Division,
NRPO, Washington, D.C.

MONCADO Ms. M., Vice Chairman, Task Group 3-73, DOD LSPC,
Washington, D.C.

MOORE Mr. M., Technical Information Transfer Officer, AEC,
Oakland, Ca.

NOLLEN Ms. J., Project Manager, CIAPS, Randolph Field, Tx.

O'ROURK S/SGT, USAF, CIAPS Systems Specialist Mather AFB,
Ca.

PACHERIS L/COL P., USAF, Director, Base Procurement Office,
Lackland AFB, Tx.

PARSONS Mr. W., General Accounting Office, San Francisco,
Ca.

PENDELTON Mr. L., Procurement Analyst, P & P Directorate,
NASA, Washington, D.C.

REA Mr. R., Defense Documentation Center, Cameron Station,
Va.

SMITH Mr. C., Assistant Small Purchase Division Officer,
Regional Procurement Department, NSC, Oakland, Ca.

SAMBUCETI Ms. O., Deputy Chief, Procurement Division, Mather
AFB, Ca.

SNOW Mr. W., UDAPS, FMSO, NAVSUPSYSCOM, Mechanicsburg, Pa.

SOWA Mr. J., Code 97, FMSO, NAVSUPSYSCOM, Mechanicsburg, Pa.

SPEER Mr. D., Systems Analyst, Systems Support, MOCAS, DSAH,
Cameron Station, Va.

TRAINOR LCDR F., SC, USNR-Ret., Procurement Specialist,
Washington, D.C.

TUVEY Mr. L., Director, Procurement Management Division,
Regional Procurement Department, NSC, Oakland, Ca.

WAKERLING Dr. R., Defense Documentation Center, Cameron
Station, Va.

WEESNER Mr. D., Systems Analyst, Systems Engineering
Division, MOCAS, DCAS, Cameron Station, Va.

BIBLIOGRAPHY

1. A Feasibility Study for Consolidation of the Procurement Common Support Function in the Naval District Washington, D. C. Index Number 300, conducted by Commandant, Naval District Washington, D. C., June 1971.
2. Amelio, G. F., "Charge Coupled Devices", Datamation, March 1974.
3. Bernstein, G. B., "What's in the Cards for Data Entry", National Computer Conference, 1973.
4. Bish, R. L., The Public Economy of Metropolitan Areas, Markham, 1971.
5. Bogue, D. J., The Structure of the Metropolitan Community, University of Michigan Press, 1949.
6. Bollens, J. C. and Schmandt, H. J., The Metropolis, Harper and Row, 1965.
7. Chapin, W., Hyman, A. D., and Carroll, J., The Suburbs of San Francisco, Chronicle Books, 1969.
8. Corbett Consulting Company letter to authors, Subject: Impediments to Coordinated, Cooperative, Automated, Regional Procurement Management Systems, 20 October 1974.
9. County Supervisors Association of California and California County Government Education Foundation, California County Fact Book 1974, by R. T. Carey, 1974.
10. Duncan, O. D., and others, Metropolis and Region, Johns Hopkins Press, 1960.
11. Emery, J. C., "Problems and Promises of Regional Computing", Datamation, p. 55-58, August, 1973.
12. Feidelman, L. and Bernstein, G. B., "Advances in Data Entry", Datamation, p. 44-49, January 1974.
13. Field Purchasing in the Naval Supply Systems Command, NAVSUP Publication 407.
14. Gras, N. S. B., An Introduction to Economic History, Harper and Brothers, 1922.
15. Grossbaum, J. J., Procedural Fairness in Public Contracts: The Procurement Regulations, Virginia Law Review, March 1971.
16. Isard, W. and Langford, T. W., Regional Input-Output Study: Recollections, Reflections, and Diverse Notes on the Philadelphia Experience, MIT Press, 1971.
17. Judson, R. J., unpublished notes for MN 4371, Procurement Policy, Naval Postgraduate School Monterey, Academic Year 1974-1975.
18. McCormack, J. L., Mechanized Procurement Management Systems Handbook, Purchasing and Contracting Directorate, White Sands Missile Range, New Mexico, 1970.

19. McKenzie, R. D., The Metropolitan Community, McGraw-Hill, 1933.
20. McLaughlin, R. A., "Alphanumeric Display Terminal Survey", Datamation, November 1973.
21. "Micro Computers Throw the Industry Off Balance", Business Week, 16 March 1974.
22. National Industrial Conference Board Technical Paper Number 18, Economic Dimensions of Major Metropolitan Areas, by Juan de Torres, 1968.
23. Navy Fleet Material Support Office Report 69, Procurement Document Preparation, by J. G. Sowa, R. D. Newmaster and W. E. Campbell, 20 August 1971.
24. Neenan, W. B., Political Economy of Urban Areas, Markham, 1972.
25. Office of Assistant Secretary of Defense (Installations and Logistics), Memorandum for the Record, Subject: Management Review Team, 30 August 1973.
26. Ostrowski, G. S., letter to Committee on Government Operations, U. S. Senate, Subject: Potential Savings Through Simplification of the Procurement Process, 4 April 1974.
27. Peirce, N. R., The Pacific States of America, W. W. Norton and Co., 1972.
28. Report of the Commission on Government Procurement, Volume 1, U. S. Government Printing Office, December 1972.
29. Security Pacific National Bank, San Francisco Bay Area Report, April 1971.
30. Survey of Procurement Statistics, Department of the Navy, Headquarters Naval Material Command, June 1974.
31. Tuvey, L., unpublished paper in support of ABC/NRPO concept, December 1968.
32. U. S. Department of the Air Force, Implementation and Conversion Plan for Customer Integrated Automated Procurement System, Air Force Data Systems Design Center, November 1972.
33. U. S. Department of Commerce, Bureau of the Census, 1972 Census of Governments, Vol. 1, Governmental Organization, U. S. Government Printing Office, 1973.
34. U. S. Department of Commerce, Office of Area Development, Future Development of the San Francisco Bay Area, 1950-2020, U. S. Army Engineer District, San Francisco Corps of Engineers, December 1959.
35. U. S. Department of Defense, Contract Placement, DOD Joint Logistics Review Board Report, Chapter III, 1970.
36. U. S. Department of Defense, Logistics Systems Policy Committee, Automation in Procurement, Draft Final Report of Task Group 3-73, September 1974.
37. U. S. Department of Defense, Logistics Systems Policy Committee, Defense Material Procurement, Task Group 1-70 Final Draft ECGPLEM Profiles, Tab J, August 1971.
38. U. S. General Services Administration, Automated Delivery Order Handbook, Federal Supply Service, March 1972.

INITIAL DISTRIBUTION LIST

	No. Copies
1. Defense Documentation Center Cameron Station Alexandria, Virginia 22314	2
2. Library, Code 0212 Naval Postgraduate School Monterey, California 93940	2
3. Department Chairman, Code 55 Department of Operations Research and Administrative Science Naval Postgraduate School Monterey, California 93940	1
4. CDR P. De Mayo, Code 55dm Department of Operations Research and Administrative Science Naval Postgraduate School Monterey, California 93940	5
5. LCDR E. A. Zabrycki, Code 55zx Department of Operations Research and Administrative Science Naval Postgraduate School Monterey, California 93940	1
6. CDR J. F. Russell, SC, USN USS GRAND CANYON (AR-28) FPO New York 09501	1
7. LCDR Lee A. Ziegler, SC, USN 5999 Bryce Canyon Court Pleasanton, California 94566	1
8. Mr. Hugh E. Witt Deputy Associate Director and Assistant to the Director for Procurement Policy Office of Management and Budget Washington, D. C. 20503	1
9. CAPT Joseph Bray, SC, USN Logistics Systems Policy Committee Department of Defense Washington, D. C. 20305	2
10. Mr. Leroy J. Haugh Director, Procurement Analysis and Planning Office of Assistant Secretary of Defense (Installations and Logistics) Washington, D. C. 20301	1
11. Mr. Maurice R. Chenelle Chief, Procurement Systems Division Directorate of Logistics Systems Air Force Data Systems Design Center (AFDAA) Gunter AFB, Alabama 36114	1

12. RADM Kenneth L. Woodfin, SC, USN 1
Deputy Chief of Naval Material (P & P)
Naval Material Command
Washington, D. C. 20360
13. CAPT George R. Badger, SC, USN 1
Director, Regional Procurement Department
Naval Supply Center
Oakland, California 94625
14. CAPT Joseph S. Sansone, Jr., SC, USN 1
Deputy Commander for Procurement Management
Naval Supply Systems Command
Washington, D. C. 20360
15. Office of Assistant Secretary of the Army 1
(Installations and Logistics)
Department of the Army
Washington, D. C. 20314
16. Office of Assistant Secretary of the Navy 1
(Installations and Logistics)
Department of the Navy
Washington, D. C. 20360
17. Office of Assistant Secretary of the Air Force 1
(Installations and Logistics)
Department of the Air Force
Washington, D. C. 20330
18. Defense Logistics Studies Information Exchange 1
(DLSIE)
Fort Lee, Virginia 23801

Thesis
R915
c.1

Russell
Information sharing;
a precept to regional
procurement.

156505

25108-
27417

Thesis
R915
c.1

Russell
Information sharing;
a precept to regional
procurement.

156505

thesR915

Information sharing :



3 2768 001 97010 6

DUDLEY KNOX LIBRARY